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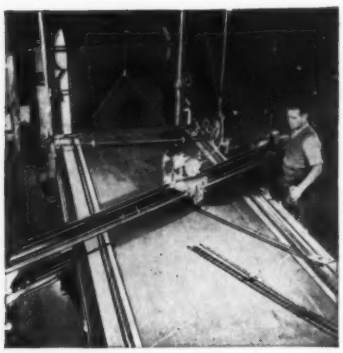

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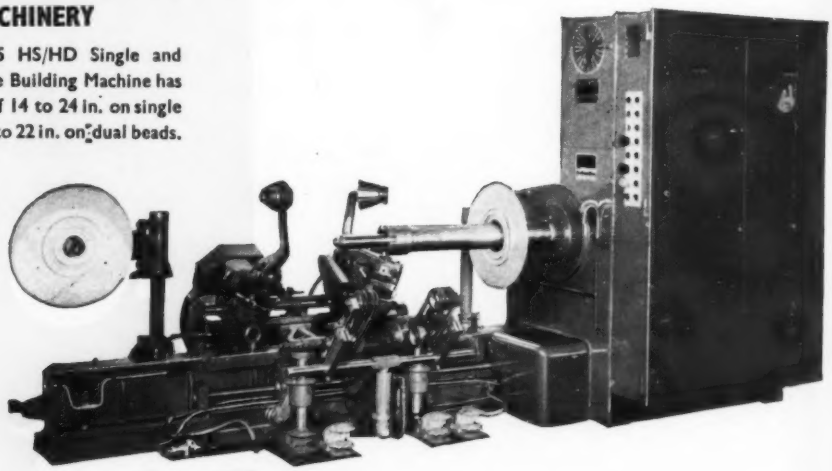

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Rubber Journal and International Plastics

Volume 136 **Price 1s. Post free 1s. 4d.** **No. 13**

IN ITS 75th YEAR

March 28 1959

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Grams : ' Buns, Souphone, London ' Phone : HOP 5712
Annual Subscription, including Postage: United Kingdom and Oversea, £2 15s.; Index (half-yearly), 10s. per annum extra. Published weekly. Registered at GPO as a Newspaper. Registered for Transmission by Canadian Magazine Post. Entered as Second Class matter at Post Office, Boston, Mass, USA, under the Act of March 3, 1879 (Sec. 397 P. L and R.)

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NOTES of the WEEK

Rubber Means Safety

THE merits of rubber liferafts have been amply proved over the last few years by the crews of fishing vessels and coastal shipping. In these vessels with relatively low decks the crew jump into a liferaft which has been automatically inflated in the sea. Passengers of larger ships cannot be expected to scramble down rope ladders or perhaps jump into a liferaft 30ft. below. Last week, however, there was news of a new method of launching liferafts. The rubber raft is automatically inflated in seconds on the deck of the liner and passengers walk straight into it. The new launching method makes use of a single-arm davit, which lowers the fully-manned liferaft to the water in two minutes 20 seconds from the stowage position. This means that for the first time the inflatable rubber liferaft can be regarded as lifesaving equipment for all types of vessels from yachts to the largest passenger liners. This development means, of course, the probability of a really considerable increase in demand for inflatable rubber liferafts. It is also a further invaluable contribution to modern living, this time for safety of life, from a vital and growing industry that still has a tremendous amount to offer.

One Kind of a Problem

DURING the course of the lively meeting of the London Section of the Plastics Institute last week (reported elsewhere in this issue) it was stated that one of the problems of the issue of standard specifications by the British Standards Institution—a problem largely inescapable because of the sheer volume of the work involved—was that these were not infrequently issued after a number of manufacturers had got their production lines running. Mention was made at the time of the technical committees of the British Plastics Federation and, indeed, the point raised emphasizes the tremendous value of the work, particularly the preparation of draft specifications, to which members of the committees devote a very great deal of their time. During 1958 ten specifications were prepared and sent to BSI for consideration as draft British Standards. In addition, the Federation published the specification for tube for cold-water services made from high-density polythene as an interim measure pending the publication of a British Standard on this subject. It is quite obvious that the work of these committees enormously speeds up the preparation and the publication of plastics standards. It is equally obvious that such specifications are of inestimable value to the industry, for there are few quicker roads to eventual ruin than to produce materials or articles which fail in service or which do not come up to the standard expected of them by the purchaser or user.

And Another

THE other end of the problem, as it were, is how best to inform users and potential users just what they may reasonably expect in the way of properties and qualities. This aspect, too, was mentioned at the same meeting, at which Mr Dennis Mahon put forward a number of problems about the existence of which, he said, the plastics industry should quite definitely be worried. Chief of these was the need to put across to the public, so that the industry can compete alike with older and long-established materials—whose properties have been established by long familiarity—and newer materials, their properties widely publicized, the advantages, merits and shortcomings of plastics. There did not seem to be any disagreement on the part of those present that some sort of publicity campaign should be undertaken, although estimates of probable cost varied somewhat from £100,000 to £½m. per annum. The British Plastics Federation has an active and alert Publicity Committee and it is perhaps encouraging, from the point of view of benefit to the industry, that the figure of £½m. a year as a desirable but minimum objective was put forward by Mr J. V. Crossley, who is the new chairman, as from last week, of the Federation's Publicity Committee. Interestingly enough, Mr Crossley estimated that if the load were equitably spread over the industry the cost to a company would be of the order of 0.1% of turnover. When the aggressive activities of other industries, some of them at present directly competitive with plastics, are taken into account, this cannot be said to be a lot of pennies.

Esrever

SCIENCE fiction has reached the house journals. In the March issue of *John Bulletin* is to be seen an announcement concerning ' Emit '—' Final instalment of our thrilling Science Fiction Serial.' The story is, of course, about the inventor of a time machine, a subject evidently closely studied by the editor of the John Bull Rubber Company journal as can be seen by the note at the end of the final instalment—' Look out for the previous instalment of this dramatic story in a subsequent issue.'

NEWS *Briefs*

MALAYAN RUBBER MISSION — PLASTICS WINGS AND BONNETS — SEMDEC DECKING — US TYRE RESEARCH GROUP — TEXAS POLYTHENE PLANT

●**United Kingdom**—A contract worth £7,000 has been placed for the installation of 1,000 sq. yd. of Semdec plastic decking on the first of the P and O tankers now under construction at Southbank, Middlesbrough. Semdec was developed by Semtex Ltd., a Dunlop subsidiary, as a substitute for timber weatherdecks.

●**United States** — Seiberling Rubber Company is expanding its tyre research and development programme to bring out what it describes as 'entirely new' types of tyres and related products. The company has established a special tyre research group to work on new products and at the same time has enlarged its tyre development department, according to an announcement by Mr E. A. Hensal, vice-president in charge of production.

●**Malaya** — The President of the Malayan Estate Owners' Association, Dato Sir Clough Thuraisingham, has suggested that a rubber mission be sent to all rubber consuming countries to stimulate the sale of Malayan rubber and, if necessary, negotiate long-term contracts. The mission should be sponsored by the Malayan Government and the Rubber Producers Council. Unless this was done, he told the Association's annual meeting, they could not determine the extent to which synthetic production would be expanded and the way in which natural rubber might be menaced in future years. They could not and should not disregard such extensive buyers of Malayan rubber as the Soviet Union and China on the grounds of political considerations and ideologies.

●**United States** — Dayton Rubber Company has announced the acquisition of two aircraft equipment manufacturers located on the west coast. The cost was not disclosed. Mr C. M. Christie, Dayton Rubber president, said the firms are Hardman Tool and Engineering Company of Los Angeles, an aircraft seat manufacturer, and Aircraft Standards Incorporated of Santa Monica, a manufacturer and designer of tools, dies and fixtures for the aircraft and missile industries.

●**United Kingdom**—Asked in the House of Commons whether he would now report on the experiments carried out by his department for plastic wings and bonnets for service vehicles, Mr W. J. Taylor (for the Minister of Supply) said: 'Experiments show that the use of a number of plastics would be technically acceptable provided that they are properly compounded and suitably reinforced. None of the major motor vehicle manufacturers has as yet adopted plastic wings and bonnets for their commercial vehicles. I am told that the reasons for this are largely economic. Since it is the policy to buy vehicles which are based as nearly as practicable on standard commercial products, plastic wings and bonnets are not yet in use in Service vehicles. Developments of plastic materials will continue to be studied.'

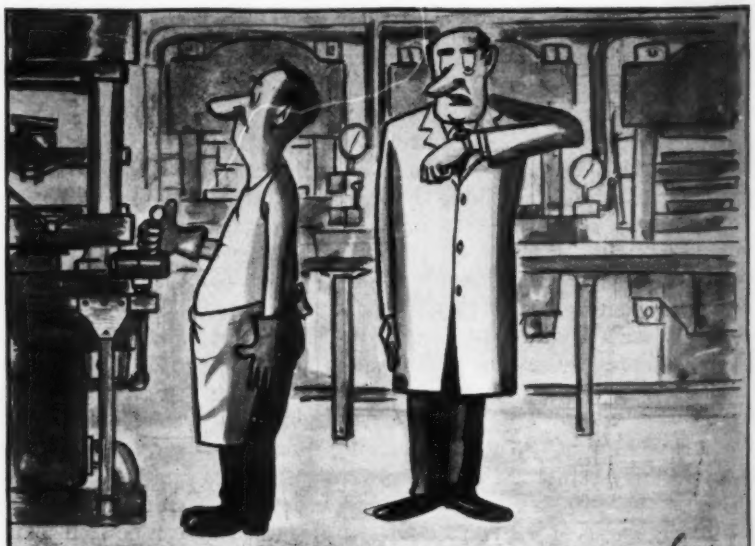
●**Malaya** — Malaya is to appoint a Trade Commissioner in London, a spokesman for the Ministry of Commerce and Industry said in Kuala Lumpur recently. The proposed appointment would be filled by a specialist to promote Malaya's trade relations. Malaya plans to build a team of trade experts to be stationed in foreign capitals.

●**United States** — National Distillers and Chemical Corporation's new 75m. lb. per year polythene plant is now on stream at Houston, Texas. The company is already planning a major expansion of the new plant which will double its capacity by the third quarter of 1960. National, through its US Industrial Chemicals Company division, now produces about 100m. lb. of polythene a year at its Tuscola, Illinois, plant. The planned expansion will raise this annual total to 250m. lb.

HAPPY BIRTHDAY

Birthday greetings to Dr D. Parkinson and Mr A. G. Cogswell (assistant personnel manager, Fort Dunlop) for April 1; Mr H. A. Howard (The Hairlok Co. Ltd.) April 2; Mr B. S. Davies (P. B. Cow and Co. Ltd.) and Mr W. S. Alexander (Corrance and Yuill Ltd.) April 3; Mr J. M. Gallie (R. and J. Dick Ltd.) April 4; Mr P. W. Howard (British Tyre and Rubber Co. Ltd.) April 5; Mr C. H. Leigh - Dugmore (Fort Dunlop) April 9; Mr J. E. Nathan (Francis Peak and Co. Ltd.) and Mr A. P. Marsh (David Marsh (Manchester) Ltd.) April 13; Mr J. F. Selby (J. G. Ingram and Son Ltd.) April 16; Mr C. B. Copeman (Maclaren and Sons Ltd.) April 18; Mr G. Hardie (J. G. Hardie and Co. Ltd.) and Mr E. A. Stringer (Turner Bros. Asbestos Co. Ltd.) April 23; Mr F. T. Smith April 25; and Mr R. J. Barber (development division, Dunlop Rubber Co. Ltd.) April 28.

'.'Duly authenticated dates for inclusion in this feature will be welcomed by the Editor.



'Ten—nine—eight—seven—six—five—four—three—two—one—ZERO!'—432

Process Control and Fluorinated Polymers

TWO LECTURES TO LONDON SECTION IRI

VARIATIONS in raw rubbers, in various compounding ingredients and in textiles were referred to by Mr L. R. Mernagh, Firestone Tyre and Rubber Co. Ltd., in his paper 'Process Control in the Rubber Industry' presented to the London Section of the IRI on March 10. These variations, as well as human variations, necessitated more technical control in the rubber industry than in most industries.

Because of the high cost of rubber, which constituted about half the total cost of many rubber articles, the examination of this raw material must carry high priority. Materials such as carbon black which were known to be tested by manufacturers could not be regarded as safe to use unless tested again by the consumer. Nevertheless, the work of testing cost money and the imposition of unnecessary restrictions on the supplier increases the cost of any material. Therefore purchasing specifications should contain no non-essential clauses.

Conventional chemical examination of compounding ingredients had given way to more rapid tests which required less operator skill. Ultraviolet absorption was a popular technique to which most rubber additives lent themselves and paper chromatography was of growing importance. Accelerators were examined in the form of a 0.1% solution in chloroform and UV absorption was plotted against wavelength. This technique was also employed for the testing of master batches.

Physical tests had a different objective and it was essential for control purposes that they be carried out rapidly, even at the expense of great accuracy. Some 1,500 tests per day were performed to establish that each batch possessed properties within the permissible range. Density of compounds was tested by immersion in calcium chloride solutions and that of rubber by means of a 'densimeter' which accepted 100 grams of rubber in a cylinder. The ram compacted it, eliminating air, and measured its volume, giving a direct reading of density. Modulus was measured by stretching a ring, using a pendulum machine with adjustable weights.

Plasticity was determined on sidewall and other stocks required to possess good flow properties. The Williams plastimeter was frail and slow in operation but accurate and useful as a referee for other types. The Mooney machine was used mainly for plasticity and scorch tests. The Wallace instrument was so rapid in operation that duplication of tests could be employed for increased accuracy. The Dillon extrusion plastimeter measured time for the extrusion of a known volume. The whole test took about four minutes and was used mainly for the control of blended rubbers. These instruments gave unrelated results so acceptance standards must be determined with each.

In tests on vulcanized products; for process control purposes, delay was avoided by measuring hardness immediately after the tyre left the mould. The figure so obtained was 5–7 points below the normal hardness.

Tyre components were separately tested. Bead wires were pulled out of a portion of the bead to test adhesion of rubber to metal and sections of carcase were submitted to ply adhesion tests both at room temperature and hot after ageing. Flexing tests applied to sidewall rubbers were of the belt test type in which a strip was repeatedly flexed under compression on a pulley, the resultant loss of strength being used as the criterion of flex resistance. White sidewalls were submitted to exposure in ultraviolet radiation for 3½ hours and the discoloration assessed by comparison with standards. Factory operations were controlled where possible by automatic devices.

Mr Mernagh finally stressed that the determination of the amount of testing appropriate to a product was a matter of good sense. Every test should be meaningful. It took a sound judgment and courage to stop production for a technical reason. Such a stoppage resulted in more than the immediate loss of production; it disturbed rhythm and had repercussions in other parts of the factory. When tests showed abnormal results the most important and most difficult aspect of the situation was to find the source of error and the means of correction. In some cases it was advisable to attack the apparent source of trouble directly rather than adopt the more time-consuming alternative of going back immediately to conditions which were known to yield satisfactory results and then to change the conditions one by one until the trouble recurred.

Curing Agent for Viton

The second lecture, given by Mr R. R. Radcliff, of E. I. du Pont de Nemours and Co., entitled 'Fluorinated Polymers,' was devoted entirely to Viton A and recent developments in its compounding and vulcanizing. Viton was obtained from the combination of vinylidene fluoride and hexafluoropropylene. This material could be cross-linked by the use of high energy radiation, by peroxides and by certain amine derivatives of which the last named are the most promising. The amine derivatives tended to give gases, mainly carbon dioxide, as reaction products and theoretically porosity could arise. Although no evidence of such effects of gas formation has been established, some work had recently been directed towards finding cross-linking agents which did not produce gas.

A further need which had arisen was a method of bonding Viton A to metals, the existing vulcanizing systems being unsuitable. Trials with a new curing agent LD-214, N.N. dicinnamylidene 1,6 hexane diamine, in a concentration of 2 to 3 parts phr achieved these two ends. Compounds proved safe for processing but required a press cure at 300°F. followed by a long period of oven heating at high temperature. Even so, compression set was high, indicating a fairly low state of cure.

A short complete cure in the press would be highly attractive but so far this has not been possible. It was curious that even press cures of up to 24 hours at 400°F. did not produce full cure nor as good a cure as 15 minutes in the press plus several

hours at 300°F. in the oven. The optimum conditions for the post-cure were found to be 12–16 hours at 300–400°F.

Further experimental systems containing 2 parts of dithiol and 0.25 parts of a tertiary amine gave a good state of cure as judged by compression set, and the possibility of curing at lower temperatures but the product proved to be less suitable for high temperature ageing. As the test temperature was raised from 75°F. to 300°F. there was a large fall of tensile strength, its magnitude being affected by the curing system and the fillers, but experience had shown that tensile strengths of the order of 400 psi are adequate for some aircraft components subject to dynamic conditions.

Raw Viton A displayed good low temperature properties but when compounded and cured its brittle point was higher. It was hoped to improve this property by addition of plasticizers such as trioctyl phosphate and diisobutyl ketone. After press cure, the hope was realized but after subsequent oven heating most of the plasticizer unexpectedly volatilized. Investigation showed that there was much greater loss from the Viton compound than from the liquid plasticizer itself and no explanation of this had so far been established.

The use of 15 parts of magnesium oxide was recommended as part of the satisfactory curing system but it had recently been discovered that when resistance to corrosive chemicals was a primary consideration improved resistance was obtained by the use of litharge.

Viton A was already being used in solution form as a coating for steelwork and in the solid form as mouldings. For a few applications neither of these forms was suitable. So recent work had been directed towards the development of a storage-stable latex dispersion, LD-242. Success was recently achieved and the product, of 60% solids content and pH of 3, would shortly be available in bulk. It was a useful binder for asbestos fibre and could be used for the production of dipped goods.

It was emphasized that Viton A provided a combination of heat and solvent resistance not obtainable otherwise. Military uses which had so far been the major outlet, were expected to be overtaken by industrial applications in the near future.

During a lively discussion which followed the lecture, information was disclosed on the bonding of Viton to metals, the re-use of scrap, the compounding of coloured materials and on the shrinkage of mouldings.

Electric Welding Torch

An electrically heated welding torch, the 'Gee-Bee,' specially designed for thermoplastic materials, is being manufactured by Goodburn Plastics Ltd., Arundel Road, Trading Estate, Uxbridge, Middlesex. It incorporates features which, the makers state, successfully eliminate the failures often encountered with other types of welding torches. The heater element of the torch can be exchanged in a matter of seconds by unscrewing

The 'Gee-Bee' welding torch weighs only 21 oz.

the top of the tool, withdrawing the old element and inserting a new one. The element reaches its maximum temperature within about 10 minutes from the time the current is switched on, and the welding gas emerges at a temperature of about 280°–300°C. measured ¼in. away from the nozzle tip with the welding gas adjusted to a flow of 20 litres per minute at 5 psi pressure.

The handle of the torch is well insulated and remains cool, and a built-in support enables the operator to stand it safely on a workbench without damaging it. The nozzles of the torch can be changed to suit different welding conditions; each torch is supplied with two nozzles—one of ⅛in. bore and one of $\frac{3}{16}$in. bore. An interesting feature of the tool is the knife edge built in under each nozzle for cutting off filler rods and for other cutting operations on thermoplastic materials.

The torches are 15½in. x 3in. and weigh 21oz.; three types are available for 230, 110, and 42 volts. Prices are £11 for the first two types and £10 for the 42 volt type.

Vinl-Sweep

A new type of fix-it-yourself weatherstripping — Vinl-Sweep — especially recommended for sealing domestic and industrial buildings against external draughts, is now being marketed in this country. Composed of a flexible vinyl strip inserted in a rigid frame of high-impact Geon PVC, Vinl-Sweep is easily fixed to any exterior door giving positive protection by sealing in warm air and keeping cold air out. This material is made by Adams and Benson Ltd., Duraflex Division, Albion, West Bromwich.

Dunlop Disc Brakes

A new film, 'The Power to Stop,' showing the development of disc brakes and their contribution to road safety has been produced for the Dunlop Rubber Company by Ronald H. Riley, in association with the Film Producers' Guild.

The film, which runs for 21 minutes, and shows the company's contribution to the development of disc brakes, is available from the Dunlop Film Library at Wilton Crescent, Merton Park, S.W.19.

Onazote Insulation Co. Ltd., Mitcham Road, Croydon, have recently completed the insulation of a sphere, at Flixborough, Lincs, used for the storage of liquid ammonia at 10-15 psi gauge. It operates down to -20°F. The vessel has been insulated with 7in. of Onazote in four layers. It is finished in bituminized tape. Onazote, with its cellular construction, was chosen for this application because of its lightness and greater resistance to moisture penetration than cork

New Factory for Jointine Products

INCREASED PRODUCTION OF RUBBERIZED PAPERS

THE story of Jointine Products Co. Ltd. is one of steady growth and expansion. Started in 1929 under the control and direction of Mr James Dundas, founder of the firm, the company has grown steadily and the latest stage in this process was reached recently when a new factory was opened at North Hykeham, near Lincoln.

The first product produced 30 years ago on a hand mangle was soft compressible fibre jointing for gaskets. Whilst this product still occupies a large proportion of the productive capacity, the company has increased its incursions into the field of paper treatment and today produces a number of rubber and plastic-coated papers, in addition to rubberized papers.

For the moment the company is still retaining its factory in Tanners Lane, Lincoln, but the move into the new factory is expected to be completed over the next 12 months. Work on the new building started in 1954, but the major part of the project has been carried through under the direction of a new management, as Mr Dundas retired at the end of 1955, when Mr A. D. Ward was appointed managing director and Dr P. H. Amphlett technical director.

Design Considerations

The design of the main factory building, which covers 40,000 sq. ft. of floor space, was considered in relation to the types of machinery to be installed, the general requirements of the processing plant, and proximity to outside installations of importance to the general functioning of the factory. The location of the outside installations was made in order to avoid long pipelines for pumping solvents.

The factory area has been divided into roughly two equal sections and, in view of the inflammable nature of the solutions handled, all the equipment in one section is of a flameproof nature and this section has been sealed off from the remaining part of the building by a fully-fireproof partition wall, together with double fireproof doors.

Consideration had to be given to the number of air ducts associated with each machine and also the need for ducts to atmosphere or to the solvent recovery plant. It was realized that since each plant would have a number of ducts leading either to atmosphere or the recovery plant, there was a need for facilities for ducting to be carried laterally across the building to a main central ductway to join up with ducts from other machines. Such air ducts normally give an untidy appearance to a factory and the particular type of roof structure, known as a Monitor roof, was selected since a number of ducts could be incorporated in each monitor section with only a minimum obstruction of light, while remaining out of sight and giving a generally neat and tidy appearance. This monitor type of roof provides a very good general illumination in the factory by daylight and also forms a natural explosion relief in the event of fire.

Only minimum quantities of inflammable solvents are stored inside the factory, the bulk being retained in underground storage tanks and pumped to machines in the flameproof section as required.

Two basic processes are used in the factory to manufacture a range of materials having properties in regard to flexibility, toughness, compressibility, strength and resistance to solvents, making them suitable for use in such things as book covers, boots and shoes, cases, industrial tapes and jointing materials. The two methods of forming the base material are either by impregnation of an already formed sheet with resins or rubber-like substances, or by the incorporation of these substances during the formation of the sheet material by beater treatment.

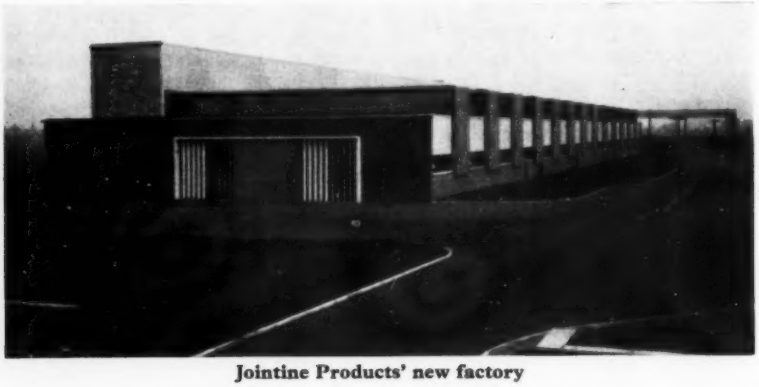
The main item of new plant for the impregnation process is a 96in.-wide machine capable of carrying out a number of varied duties in order to be as versatile as possible. These include impregnation and coating facilities for both aqueous and solvent solutions. The machine is divided into three drying sections, each 70ft. long and capable of individual control in regard to temperature and air flow, drying being carried out by hot air, controlled through steam-heated batteries. Several coating heads are provided so that more than one coat can be applied for a single pass through the machine.

In view of the enormous potential possibilities of the second process, beater addition treatment, confirmed by developments in the USA and experience with the pilot plant at the company's laboratories, a large-scale paper-making plant has been installed. An 80in. machine has been specially constructed capable of making material from the very thinnest up to about $\frac{1}{10}$in. thick, with the bulk of the trade in the latter group. This new paper-making plant varies from the usual type as quality and freedom from waste is more important than speed of processing. The high cost of waste is accentuated by the difficulties associated with re-pulping, as the rubber in the paper has been vul-

The impregnating and coating machine

canized during the drying process and the great bulk of the paper after this stage cannot, therefore, be re-pulped.

After the pulp has been beaten up on beaters it is piped into reaction vessels where the rubber latices are added. This aqueous dispersion is then piped to the paper-making machine.



Jointine Products' new factory

In addition to the two machines described above, the plant already installed at the new factory also includes a double-sided embossing plant, a laminating plant for combining impregnated papers to make up to ¼in. thick, and a solvent recovery plant. There is also a fully equipped laboratory for routine control and testing. Over the next few months, however, further plant is to be erected or removed from the old factory and this will include a 60in.-wide impregnating and coating machine of the same type as the 96in.-wide machine already installed; a 60in.-wide coating plant for either solvent or aqueous coating; a 42in.-wide impregnating plant incorporating festoon drying, to be constructed in a separate building; and calenders, slitting, sheeting, reeling and trimming machines.

The official opening was preceded by a luncheon at the Saracen's Head in Lincoln which was attended by the Earl of Ancaster, T.D., the Mayor of Lincoln and other City dignitaries, and many leading personalities from supplier firms to the rubber and plastics industry.

New Synthetic Rubbers

50% OIL EXTENDED

TWO new synthetic rubbers extended with 50 parts oil which can be processed on standard rubber processing equipment have been introduced by the Chemical Division of the Goodyear Tire and Rubber Company, Akron, Ohio, USA.

In introducing the new polymers, Plioflex 1713 and Plioflex 1714C, Goodyear claim to have overcome the problems of producing a 50-part oil extended rubber having the necessary physical properties for easy processing into quality end products.

Plioflex 1713 is a non-staining, non-discolouring cold rubber extended with 50 parts of naphthenic type oil. It provides light colour characteristics similar to another Goodyear rubber, Plioflex 1502. As a general purpose rubber, it is designed for use in heels, soles, toys, flooring, sporting goods and other applications where light colour and low costs are of prime importance.

Plioflex 1714C is a cold rubber extended with 50 parts of a highly aromatic oil. It is a staining type rubber which plasticizes efficiently and is stated to give high processing and physical properties at low cost. Stabilized with Goodyear's recently introduced Wingstay 100, an anti-oxidant anti-ozonant, it has excellent raw polymer stability and high resistance to ozone and oxygen. It is designed for use in tyres, camelback and mechanical goods.

Mr J. Dalgleish, Mr C. M. Norman and Mr A. W. M. Hartley have been appointed to the board of the Beaufort Borneo Rubber Co. They succeed Mr L. A. Gossman, Mr R. H. Landman and Mr R. de Rougemont, who have resigned as directors.

Chemical Engineering Exhibition

About 409,000 sq. ft. (38,000 sq. m.) of net stand space in addition to 43,000 sq. ft. (4,000 sq. m.) in the open air will be available for the Achema 1961, 13th Chemical Engineering Exhibition Congress at Frankfurt, June 9-17 1961.

Closing date for application for stand space is May 1 1959. Details are available from the Dechema, Frankfurt (Main) 7, Postfach, Germany.

NEW BRITISH CELLOPHANE DIVISION

British Cellophane Ltd. has formed a Plastic Films Division under which the company now groups the manufacture and marketing of films other than 'Cellophane' cellulose film.

Mr J. Schwartz, who has been with the company since its formation in 1935, and was recently sales service manager, has been appointed manager of the new division. Production manager is Mr D. Noble, and the sales manager is Mr D. F. H. Drew.

J.Schwartz, manager of BCL's new Plastic Films Division

The Plastic Films Division is at present responsible for the production and marketing of BCL polythene film which the company has been making for a number of years. It is also developing 'Lubrithene' (a multi-ply thermoplastic material used as a separating membrane in concrete-laying) which BCL introduced in 1958. This material is currently undergoing extensive trials in the construction of aircraft-runways and roads in various parts of the country.

In addition, the Division is marketing three other films for which British Cellophane Ltd. have been appointed selling agents. These are Dupont's 'Mylar' (polyester) film, the unplasticized PVC film manufactured by La Cellophane SA of France, and the biaxially orientated polystyrene film made by BX Plastics Ltd.

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Automation at Fort Dunlop

A STEP towards automation in the tyre industry is the introduction at Fort Dunlop of new electronic machinery, operated on a time-temperature basis, to control the mastication of crude rubber and the subsequent mixing of the various ingredients that go to make up the modern tyre. Both mastication of crude rubber to soften it, and the mixing of the ingredients, are carried out in Banbury mixers, but the systems are slightly different. In mastication, the crude rubber is manually loaded, the machine started by a control button, and the rubber automatically discharged either when a predetermined temperature is reached, or after a fixed time has elapsed. In mixing, both time and temperature requirements must be satisfied before the compound is discharged.

To record the temperature an electric thermometer inside the mixer is used. When the required temperature is reached, an electronic switchgear unit opens the discharging door and the rubber is discharged. The machine then resets itself for another cycle. In the case of failure of the system, a clock will operate a master switch overriding the other auto controls. The automatic timing mechanism consists of a battery of timing discs, one for each mechanical operation, which can be set to operate as required.

Instrument panels in the control room, each with emergency switches, preset timing mechanism, guardian clock and a visual record of mixing temperatures ensure accurate control of the Banbury mixers. The degree of automation achieved has reduced the amount of skilled supervision necessary and virtually eliminated the loss of batches due to faulty mixing.

Waiting to load a batch of crude rubber into the Banbury, the operator pauses while the machine resets itself after discharging a batch of mixed compound

Goodyear Tyre Prospects

All major segments of Goodyear's business, Mr Victor Holt, Jun., executive vice-president, stated in Akron, are running ahead of a year ago including tyres, plastics, film foams, conveyor belts, hose and scores of non-tyre rubber products that go into cars. Goodyear's tyre plants are running near capacity as the industry and its customers seek to build inventories as a hedge against strikes, he noted. Long strikes could create some tyre shortages later this year, he said.

Due to rising costs in the US, it was not inconceivable that within 20 years tyre manufacturers might make a lot of their tyres overseas and ship them back to the US, he said.

Mr. Russell de Young, president of Goodyear, observed that labour costs in West Germany were about one-third of what they were in the US. Reportedly, he added, one US tyre firm was making industrial pneumatic tyres overseas and shipping them back to the US.

IRI Merseyside Section

DINNER AND DANCE

THE second dinner and dance of the Merseyside Section, Institution of the Rubber Industry, took place in Liverpool on Saturday March 7 and was attended by over 120 people. The occasion was a great success and judging by its popularity its place as an annual event is now assured.

The Chairman of the Section, Mr R. L. Dunn welcomed the members and their guests and spoke of the value of a social function for providing an ideal opportunity for people from all sections of the industry to meet together in a happy and informal atmosphere. The toast to the ladies was proposed by Mr R. I. Wood, and a response was given by Mrs. E. C. Rodgers. There were many table and spot prizes, as well as gifts for all the ladies present.

The Committee of the Section wish to thank the following for their generous assistance: Anchor Chemical Co. Ltd., Burtonwood Engineering Co. Ltd., F. W. Berk and Co. Ltd., British Recovered Rubber and Chemical Co. Ltd., British Geon Ltd., Cabot Carbon Ltd., Dunlop Rubber Co. Ltd., Dunlop Footwear Ltd., Dunlop Sports Co., Thomas Dryden and Sons Ltd., Hubron Rubber Chemicals Ltd., Liverpool Electric Cable Co. Ltd., North Western Rubber Co. Ltd., Mrs D. M. Rodgers, Witco Chemical Co. Ltd.

Among those present at the second dinner and dance of the Merseyside Section, Institution of the Rubber Industry, were *(left to right, facing page)*: **1, Mr D. C. Mackay and Mrs D. C. Mackay, Mr F. J. McLellan and Mrs F. J. McLellan, Mrs T. A. Brooke and Mr T. A. Brooke; 2, Mrs L. D. Gill and Mr L. D. Gill, Mrs S. A. Horobin and Mr S. A. Horobin; 3, Mrs D. G. Jones, Mr H. C. Guthrie, Mr T. R. Waring and Mrs H. C. Guthrie; 4, Mr R. I. Wood and Mrs R. I. Wood, Mr R. L. Dunn, Mrs C. E. Thomas and Mr C. E. Thomas; 5, Mr J. Whitby (treasurer) and Mrs J. Whitby, Mr F. W. Ball (secretary), Mrs M. Bell, Mr R. L. Dunn (chairman), Mrs C. E. Thomas and Mr C. E. Thomas; 6, Mrs R. Lawson, Mr W. F. Williams and Mrs W. A. Storey; 7, Mr J. M. Pringle, Mrs J. Molden and Mr J. Molden, Mr D. Roylance, Mrs T. Broadhurst and Mr T. Broadhurst; 8, Mr K. T. Ledgard, Mr N. Baxendale, Mr M. Jenkins, Mr T. Connell, Mr J. Cashin, Miss E. Wilson, Mrs N. Baxendale, Mrs M. Jenkins and Miss D. Brown**

Rosehaugh (Ceylon) Rubber Co., which is controlled by Rosehaugh Co., announces a final dividend of 15% making 20% for 1958.

Storeys at Design Centre

DISPLAY OF SHEET PLASTICS

OVER the last few years, there has been a marked improvement in the design of plastics curtaining. This has been largely due to the pioneering efforts of Storeys of Lancaster, the largest producers of sheet plastics in the country. A display chosen from their latest range is now on show at The Design Centre (until April 11).

The quality of designs—brightly coloured, imaginative, superbly printed and effectively embossed—has gone a long way to establish plastics curtaining as a material in its own right, rather than as a low-priced substitute for more traditional fabrics. The machinery employed in the printing department is of the latest type, capable of printing up to 54in. widths continuously at high speed in six colours.

A section of the exhibit currently on display at the Design Centre, Haymarket, London, featuring various domestic products of Storeys of Lancaster. Some 22 patterns are on show, their embossing and printing being highlighted by back and top lighting. A vertical display board also shows four Con-Tact designs and four upholstery qualities from the Storide range

Storeys have also shown with conspicuous success that there is a market for plastics curtaining on the Continent. The company's design panel, headed by Mr H. Spencer, has made a point of producing designs specially suited to the tastes of different European countries.

Besides PVC sheeting, Storey's manufacture a considerable number of other types of sheeting, supported and unsupported. These also reflect the up-to-date and forward - looking approach of this old-established company. Con-Tact and the high gloss Con-Tact Extra are well-known self-adhesive sheetings with their own wide range of patterns. Plastoglas is a heat-sealable laminate incorporating PVC and glass fibre and consequently having the properties of both materials. Plastoglas is available in various weights and colour printed in different designs. It has a very high tear resistance and tensile strength; in fact, it does not burst at over 400lb. per sq. in. as tested in Storey's laboratories on the Goodman machine. Other products include Neohide, a PVC laminate used in the manufacture of handbags, brief and document cases and Plastolam vinyl film for lamination to steel.

Equipment used by the company includes Bridge Banburies, in which PVC, plasticizer, pigment and stabilizer are mixed; Farrel Birmingham inverted 'L' calenders—two rolls steam heated and two rolls water heated—to which the sheeted compounds go, and David Bridge calenders and open roll mixers.

Maintenance of the high quality of the company's products forms part of the work carried out in the extensive laboratories where continual and comprehensive tests are made on all stages of manufacture. These include daylight and weather testing of materials exposed on the roof of the laboratory building. A very wide range of testing equipment, such as flex testers and a ballistic tear strength machine, is available.

In the display at the Design Centre are 22 lengths taken from the 1959 range of opaque and translucent sheeting, together with panels of PVC-coated fabrics and Con-Tact self-adhesive plastics. The curtaining retails at prices from 2s. 11d. to 4s. 11d. per yd. and the Con-Tact is priced at 2s. 3d., 3s. 9d. and 8s. 6d. per yard.

ANALYSIS OF PLASTICS

Six-week Course at NCRT

A COURSE of six lectures on 'The Analysis of Plastics' is to be held at the National College of Rubber Technology, Northern Polytechnic, Holloway Road, London, N.7, on Wednesday evenings, commencing on April 29. The course, which will cost £1 2s., is intended for those concerned in the application of recent developments in analytical techniques for plastics.

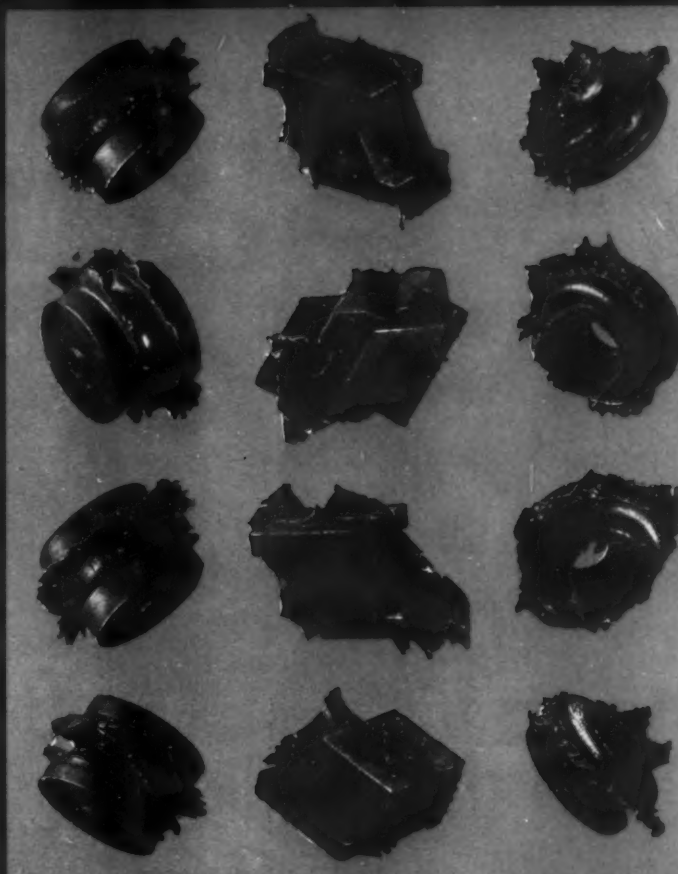
Details of the lectures are as follows: April 29, 'Introductory Survey,' by W. C. Wake, M.Sc., Ph.D., F.R.I.C., F.I.R.I., head of the Chemistry Division, RABRM. May 6, 'Infra - Red Spectroscopy in the Analysis of Plastics,' by R. S. Branch, B.Sc., A.R.I.C., Senior Scientific Officer, Chemical Inspectorate, Woolwich. May 13, 'Characterization of Flexible Materials,' by A. G. Williamson, B.Sc., analyst, RABRM. May 27 and June 3, 'Application of Modern Methods of Analysis,' by J. Haslam, D.Sc., F.R.I.C., chief analyst, Imperial Chemical Industries Ltd., Plastics Division. June 10, 'Analysis of Surface Coatings,' by C. Whalley, B.Sc., F.R.I.C., Chief Analyst, Laporte Chemicals Ltd., Luton, late of Paint Research Station, Teddington.

Forthcoming Exhibition

A number of products in the Unilux range of sheet, etc., materials, manufactured by UAM Plastics Ltd., will be on show at the Heat and Sound Insulation Exhibition, which is to be held in conjunction with the Factory Equipment Exhibition at Earls Court, London, on April 7–17. These products will include insulated rooflights, insulated decking lights, and two types of curtain wall panels. Asbestos cement and pitch fibre products will be on show at other stands of the UAM group at the exhibition.

Mr A. H. Marshall has been elected chairman of Seafield Amalgamated Rubber Company.

De-flash small rubber parts with 'DRIKOLD' in the Columbian International Sub-zero Tumbler



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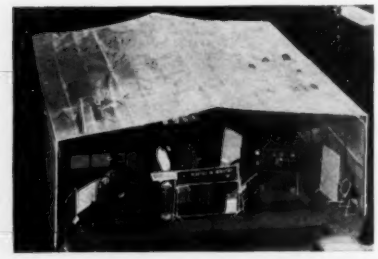
I.C.I. Travelling Exhibition

The large size of the I.C.I. organization and the diversity of its products frequently mean that many of the company's employees are unaware of the latest developments in other divisions. In an effort to bring the products of the Plastics Division to the notice of I.C.I. people up and down the country, a travelling exhibition, 'I.C.I. Plastics on Wheels' is at present touring branches of the organization. Having already visited London (from March 3 to 6), the exhibition's calls are including those to the General Chemical, Alkali, Metals, and Paints Divisions.

Some 250 I.C.I. plastics products are on show; these, which are well laid out—in sections according to their applications, etc.—include the following materials and products made from them: 'Butakon' butadiene copolymers, 'Melinex' polyester film, 'Diakon' acrylic moulding powders, 'Perspex' acrylic sheet, 'Darvic' rigid PVC sheet, 'Maranyl' nylon compounds, 'Fluon' PTFE, and 'Alkathene' polythene.

Mr J. N. Wise, in his capacity as head of liaison between the I.C.I. Plastics Division and the rest of the organization, was responsible for the creation of the exhibition, which has a staff of about ten people.



An interesting feature of the I.C.I. travelling exhibition is its covering of polythene sheet, *left*. While in London, the exhibition was situated in a car park behind Imperial Chemical House, Millbank. The interior of one of the two caravans comprising the exhibition, *below*, showing some of the 250 products

IRI Golfing Society

MANCHESTER SECTION DINNER

THE third annual dinner of the Manchester Section of the IRI Golfing Society was held at the Grand Hotel, Manchester, on March 19. The event, initiated by Mr Frank Savaage during his captaincy, has now become a well-established and outstandingly popular occasion. Attendance has increased steadily and on Thursday last nearly 90 members and their guests were present. The captain, Mr H. K. Mills, was in the chair.

Speeches, after an extremely good dinner, reached their usual high standard. In proposing the toast of the IRI Golfing Society, B. J. Haill (Dunlop) noted that the 1958 season had been very successful and hoped that the 1959 season would be even more so. Responding, J. H. Carrington (Anchor Chemical), said that the Society was now in its 37th year. The three main sections, London, Manchester and Scotland, were going strong. One of the unifying themes was the Wallwork Cup, another unifying theme was their president, Howard Franklin. Members who knew of his illness would be glad to hear that their president was now, apparently, remarkably well.

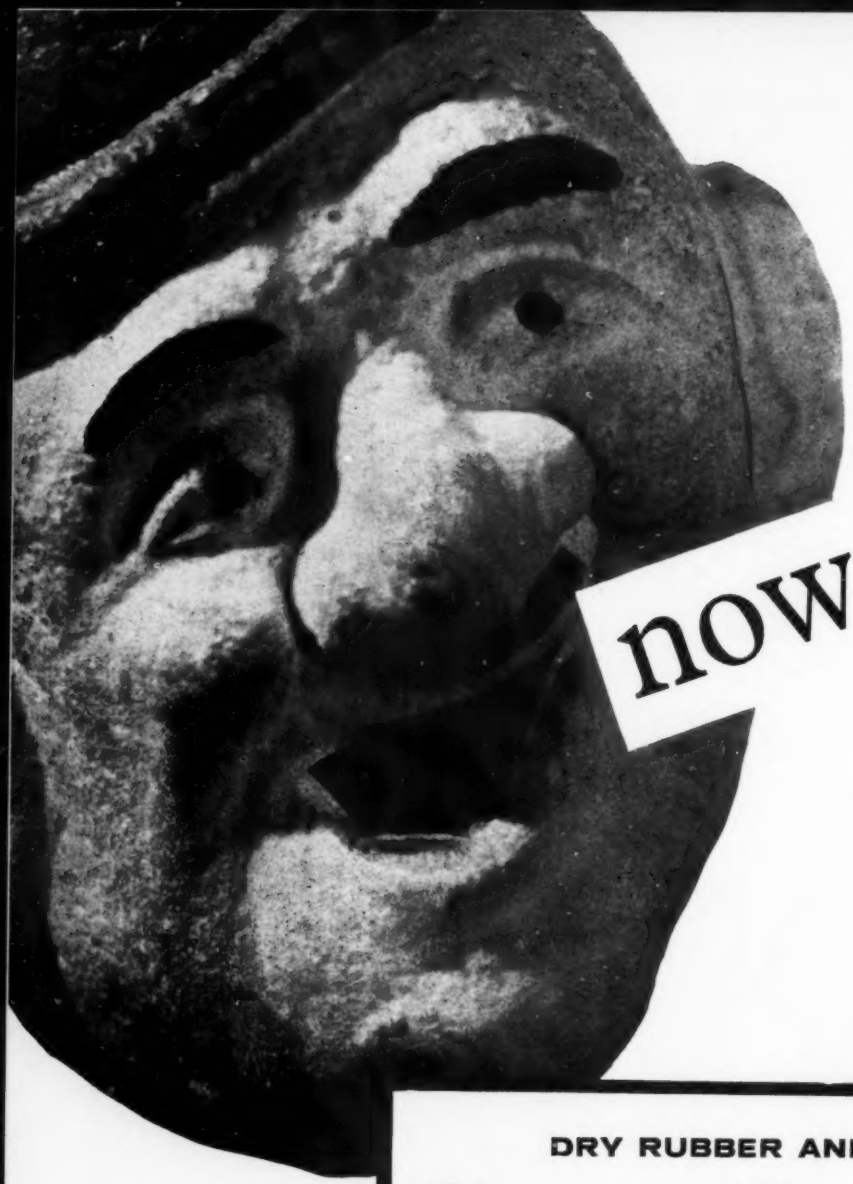
After the health of the Manchester Section had been proposed in amusing vein by Denzil Davies (Davies Tyre Co.), the Manchester Captain, Ken Mills (Rubber Regenerating Co.) responded. He said that he was very delighted on behalf of the Manchester Section to welcome all those present and he was grateful for the magnificent turnout. The Manchester Section, he went on, might not be very good at golf; they might not, for instance, win the Wallwork Cup, although he thought that could well be remedied this year, but although they might not be good at golf they did enjoy themselves.

He looked forward to having as good a gathering at Hawkstone as they had that evening and hoped it would be as good as at Gleneagles, Sandwich and elsewhere. Whether they at Manchester would add to their trophies or not, they would be very glad to see as many members as possible from London and Scotland.

In presenting the toast of the guests, R. N. Ferguson (A. O. Ferguson and Co.) said he regarded this as one of the most important of the events for he thought the Golfing Society the most important social meeting organization in the industry. People met there on very different grounds and got to know each other. Among the guests present, he went on, were David Marshall of Greengate and Irwell, Dr Ridgway of Phillips Rubber, D. M. Edwards of Dunlop, J. Ruffell of Durham Raw Materials and K. Bradshaw of David Bridge. They bid them a sincere and hearty welcome. Then, too, they had John Gallie, secretary of the Scottish Section. Without their enthusiastic secretaries, he said, their Society would have ceased to exist long ago. Dr L. R. Ridgway (Phillips Rubber Soles) responded. On behalf of all the guests, he said, he thanked Mr Ferguson for the kind words of welcome. He went on to outline in humorous fashion many different ways in which thanks could be expressed and added that the thanks of the guests were due to the Manchester Section for a very excellent meal, excellent speeches and for the good fellowship and cameraderie always associated with the Manchester Section. In a short final speech J. Gallie (R. and J. Dick) said he had to apologize for the absence of the Scottish Captain, Bill Alexander, who had sent his best wishes to the Section.

Fred May's impressions of some of those at the Manchester Section dinner are on the facing page.

At the IRI Manchester Section Golfing Society Dinner — — with Fred May



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VIEWS and REVIEWS

Endeavour

ENDEAVOUR—the high-grade quarterly review, published by Imperial Chemical Industries, 'designed to record the progress of the sciences in the service of mankind,' has now reached Volume XVIII (and, in January 1959, number 69).

It is, it seems to me, not amiss, in view of the immediate passage of the Geophysical Year, to draw attention to the drawing on the cover which 'is of the bark* *Endeavour*, which, commanded by Captain James Cook and carrying a number of scientific workers, was sent out by the British Admiralty in 1768 to chart the South Pacific Ocean and observe the transit of Venus.'

The 'Doppler' Effect

Amongst the important and interesting articles and studies in the January 1959 issue of *Endeavour*, some of which, as is usual in this publication, exhibit beautiful in-colour illustrations, is one by Professor E. N. da C. Andrade, F.R.S., Ph.D., etc., on 'Doppler and the Doppler Effect.' The short summary of this preceding the article reads: 'The Doppler effect is today applied in themes ranging from aerial navigation to the expanding universe. This article describes the origin of the principle, which was first put forward with astronomical application in view, its history and present employment.'

Doppler's paper, as Professor Andrade mentions, 'in which Doppler established the principle by which his name lives appeared in the *Abhandlungen der Königlichen Böhmischen Gesellschaft der Wissenschaften* (Proceedings of the Royal Bohemian Society of Learning) in 1843, under the title Ueber das farbige Licht der Doppelsterne (on the coloured Light of the double stars).'

Beyond the above quotation, I do not propose even to attempt to follow Professor Andrade's learned discussion —which, I feel sure, will be of the greatest interest to physicists—except to quote, as follows, from the last two paragraphs of his paper, which so clearly tell of the great importance of the 'principle,' notwithstanding the fact that Doppler's deductions from his observations, *i.e.*, his theoretical views, are not acceptable, if I may so put it, today. Professor Andrade says:

(*a. Last par. p.* 19): 'The history of the principle is, then, a strange one. It was put forward over a hundred years ago by Doppler with the sole object of explaining the colour of stars, but the deductions from observational evidence which he marshalled to support it, were completely erroneous. Some decades later it was proved to have astronomical applications of importance, which increased as time went on, and in recent times it has risen to the position of providing the main observational evidence for an expanding universe. . . . The modest Austrian would be astonished to see the scope and importance of work which in his lifetime aroused but little attention.'

(*b. Penultimate par. p.* 19): 'A last instance of present-day applications is the use of the Doppler effect to track artificial satellites circling the earth. The transmitter carried by the satellite sends out a continuous wave of fixed frequency, the modifications of which as detected by the observer are used in the manner recently described in *Endeavour*.' (Ref. Burt, E. G. C., *Ibid, 17*, 216, 1958.)

O-ring Tests

In a recent issue of *Rubber Age* (1959, *84*, 812), there is an article by S. A. Eller (Elastomers Development Section, Naval Material Laboratory, New York Naval Shipyard, Brooklyn 1) on 'An Apparatus for Preparing O-Ring Tensile Specimens.'

It appears that the laboratory (as mentioned above) was authorized by the Elastomers Branch 'under the direction of T. A. Werkenthin of the Bureau of Ships, Navy Department, Washington 25, D.C.' to evaluate O-rings intended for use as seals on cylinder liners of diesel engines. These O-rings with a cross-section diameter of 0.240 to 0.275in. and an internal diameter of about 12in. 'are much too long to be tested as intact rings on the usual Scott tensile machine.'

The quoted article then proceeds to point out that, having regard to the disadvantages of testing specially-prepared small O-rings, moulded sheets and pieces cut from an O-ring, the laboratory built an apparatus to grind pieces from these O-rings into rectangular strips suitable for preparing dumb-bell type tensile specimens. This apparatus (*photo shown in article*) is basically the same as that previously described—by S. Keller and W. K. Gondek—(ref. to *ASTM Bulletin, May* 1955, *given*) except that a roller with two semi-circular grooves machined in the surface is used instead of a flat roller.

In the present article the method of preparing and cutting dumb-bell-type specimens from the lower part of a 6in. long section cut from the O-ring, is described in detail, and the article concludes:

'It should be noted that the above apparatus permits the determination of the tensile properties of dumb-bell type specimens cut from the actual O-rings offered for delivery. Off-setting the cost of their preparation is the fact that several specimens can be prepared from one O-ring, thereby reducing the number of O-rings required for evaluation.'

Elastomer Properties at High Temperatures

In 'Views and Reviews' of March 21, under the above heading, I made a brief reference to Part 1 of a comprehensive paper by F. M. Smith (Firestone Tire, Akron) in the January 1959 issue of *Rubber World* (pp. 533-541).

* On the spelling of the word, the Fowlers, F. G. and H. W. (*The Pocket Oxford Dictionary*, at the Clarendon Press, Oxford, 1925), have some interesting remarks. They say: 'bark, barque . . . (Usu. *que*) vessel with fore and main masts square-rigged, mizzen fore-and-aft rigged; (poet., usu. -k) ship, boat.'

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by DR SCHIDROWITZ

In the February 1959 issue of our contemporary (pp. 699-701), the concluding instalment (Part II) of the said paper: 'Properties of Elastomers up to 550°F.' has now appeared.* A few details on properties and testing methods summarized or described in Part II should, I think, particularly in view of the comprehensive data given in the paper as a whole, be of special interest.

Resilience

Resilience of the compounds was determined by means of a simple steel ball rebound test which was readily adaptable to high-temperature testing (on a comparative basis) over the range −40°F. to +500°F. In this test, resilience is obtained 'as the ratio of immediately recoverable energy to the energy required to produce deformation in the test sample.' [Typical rebound curves shown in 5 Graphs.]

Some Results

All elastomers showed increased rebound with increasing temperatures, usually up to a semi-plateau, before commencing to degrade. Thus, *Hevea* showed decreasing values above 350°F. Neoprene and resin-cured butyl began to cross-link rapidly as shown by an upsweep of the curves above about 300° to 350°F.

For details of behaviour of various elastomers at high and low temperatures those given in the paper should be consulted, but it may be mentioned that *Hevea* was expected to have good low temperature properties, and this was confirmed by the fact that its minimum rebound was at −40°.

Permeability

Eighteen compounds were tested, and results, as might have been expected, varied widely, especially in some cases, as between low and high temperatures.

Test Methods

There is a most useful section on testing methods and equipment, and in the following some brief notes on these are appended. Where a reference is given (in parenthesis) this relates to Part I which appeared in *Rubber World* of January 1958 p. 541.

Conventional tests such as tensile strength, ultimate elongation, and tear, were determined at the high temperatures in a Scott tester enclosed in a temperature regulated, heavily insulated cabinet. The test strips were charged and discharged without undue cooling of the testing area (12).

Ageing

Three strips were aged at each of the three temperatures 250°, 300° and 350°F. Testing took place at room temperature. Further ageing was carried out on specimens which maintained more than 75% of their original strength after ageing for eight hours at 350°F. Rating of the polymers was on a basis of comparison of temperatures (*cf. original*).

Tear resistance was measured according to a Federal Test standard (*cf. original for details*).

Rebound Test

In the Firestone steel ball rebound test (*cf. above*) a steel ball was dropped 100cm. on to a cured rebound block. The height of rebound was recorded as the percentage of the distance dropped (13). For rebound tests samples were, as regards heat-aged specimens, kept in the oven for eight hours and then immediately tested after removing from the oven.

Permeability

Permeability was measured in a permeameter especially designed for high temperature work. The test specimen 0.025–0.030in. thick, was inserted between upper and lower halves of the permeameter cylinder having integral disc heaters in each half and a heavy jacket of thermal insulation (14). . . . Air permeating through the sample depressed the meniscus of an oil manometer outside the test chamber. Readings were taken every 15 minutes until the rate of transmission became constant. (*For further details see original.*)

I think it need scarcely be said that close study of this important paper should be undertaken by those who wish to profit by its details and general principles.

PHILIP SCHIDROWITZ

*As mentioned in my previous Note, Mr Smith's paper was presented by him before the Division of Rubber Chemistry, ACS, at Cincinnati, O., on May 15 1958. 'A major portion of the work reported in this paper was conducted under US Air Force Contract Nos. . . . which was administered under the direction of the Materials Laboratory, Wright Air Development Center, Dayton, O.'

Basic Plastics Processing

A ten-day residential course on 'Basic Plastics Processing' is to be held at the National College of Rubber Technology, Holloway Road, London, N.7, during July 15-24 1959.

Following are the topics for demonstration and practical work, which will be supplemented by lectures:

1. Compounding: Use of two roll mill and internal mixer for viscoelastic materials. Dough mixer and triple roll mill for viscous materials and of change drum tumblers for dry blending.
2. Injection moulding by hand and hydraulic machines.
3. Bottle blowing.
4. Compression moulding: Tests for flow, bulk factor and degree of cure.
5. Transfer moulding: Study of effects of temperature, pressure, gating and feed positions.
6. Extrusion of tube, cable and film.
7. Fabrication of sheet: Vacuum forming, blowing, cementing and machining.
8. Dipping techniques as used with PVC, polythene, PTFE and PCTFE.
9. Testing of plastics: Selection of BS and ASTM tests used for quality control of plastics materials.

Students will be accommodated at Carleton Grange, the Hall of Residence of the College. Further details from the Head of the College.

Here's how UOP 88* and ...to protect your rubber

What you need to know about antiozonants today

When UOP 88 or UOP 288 is compounded into your rubber products, deterioration of the polymer by exposure to ozone is prevented by action of the UOP chemical antiozonant which continually migrates to the surface of the rubber article and there acts as a sacrificial ozone scavenger.

That's nutshelling it for you. Behind this simplification of how UOP 88 and 288 work is a vast network of factors to be taken into consideration. How long and how well the antiozonants will work for you depend on a knowledge of the differences in antiozonants and the factors involved in compounding.

Knowing the difference

Antiozonants vary widely in type and composition. One material may give quite satisfactory protection under static conditions but fail miserably under even modest flexing. Another will provide mediocre protection in static or dynamic service. UOP 88 and 288, however, provide excellent ozone protection to rubber goods in storage and in use.

Proper application is almost as important as antiozonant selection. A windshield wiper blade formulation, tyre compound or gasketing recipe will differ—sometimes widely—in composition; the service conditions of the finished article are equally diverse. In making recommendations for ozone protection all these factors must be evaluated. The conditions of use and service are of utmost importance in selecting the amount and means of antiozonant protection.

At Universal Oil Products Company some of the country's most able research scientists and technicians work constantly testing and improving the UOP family of antiozonants.

What influences effectiveness

Effectiveness of antiozonant compounds may be influenced by these major factors:

1. Type of polymer, natural or synthetic
2. Curing system used
3. Reinforcing agent used
4. Concentration of the compounding ingredients, including the antiozonant
5. Conditions under which the product is to be used, including:
   a. type of stress encountered (fixed or intermittent)
   b. ozone concentration
   c. temperatures

When the product is to be vulcanized, the choice of curing system is the most important single factor in obtaining maximum antiozonant performance. The formulation being used must be suited to the curing system or much of the antiozonant's protective action will be lost in vulcanization.

The type and concentration of carbon black used as a reinforcing agent also plays an important part in retention of antiozonant efficiency through the vulcanization phase.

The concentration levels of the antiozonant must be related to other ingredients of the compounding recipe and to exposure conditions. Variations in type or concentration of ingredients reduce or enhance the final, lasting effectiveness of the antiozonant.

So you already use an antiozonant

Like most rubber goods manufacturers, you probably include some kind of antiozonant compound in

Every day we test a number of rubber recipes. Exaggerated conditions of stress and ozone concentration in the oven assure complete protection under any normal conditions.

In the Universal rubber laboratory, a rubber mill is used to incorporate experimental UOP antiozonants in various rubber polymers.

The Scott Tester is used to measure physical properties of an experimental vulcanizate.

288* work products

your product formula. What you may not know, however, is that the ozone damage problem is becoming progressively more acute and not all antiozonant compounds can cope with the increasing ozone levels. What served as effective antiozonant protection even a few years ago is inadequate today. Reported instances of deterioration of rubber goods due to ozone attack are often quite dramatic. In the Los Angeles area, where the ozone concentration is high, an unprotected rubber article may actually show ozone damage in a few days. In other large cities where ozone levels are not so high, ordinary base stocks may crack in a year or less even under static conditions.

UOP researchers have worked unceasingly and successfully to keep UOP 88 and UOP 288 compounds up to the demand placed on the antiozonant for utmost protection against this spiralling ozone load.

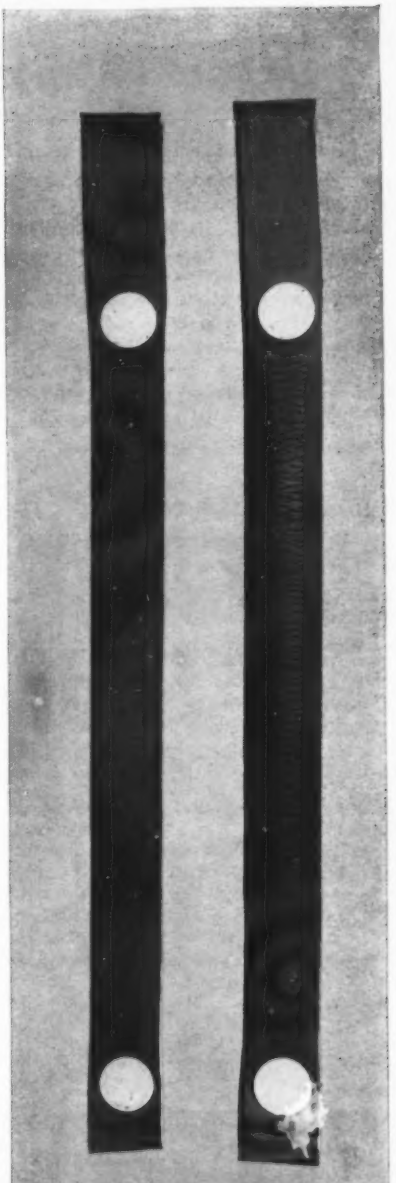
Here's proof

The UOP research laboratories are the scene of a daily battle against ozone. Through continuous research and arduous testing of thousands of antiozonant formulations in a variety of base stocks, you may be assured of absolute protection of your products when you use UOP 88 or UOP 288. In addition, many manufacturers have tested UOP antiozonants in their own laboratories and in use have proved them to be superior. One of our tyre customers recently reported that in a test of UOP 88 in their base stock, the UOP antiozonant afforded complete protection for 230 hours of exposure under fixed conditions of strain of 50 pphm ozone . . . much greater strain and ozone concentration than the tyre would ever be subjected to in normal use. Comparatively, another antiozonant, used in the same recipe, failed and the tyre cracked after only 30 hours of exposure. As a further basis of comparison, the unprotected base stock cracked in 5 hours.

How about your product?

You will get surer, more lasting protection of your rubber products with UOP 88 or UOP 288. For under twopence per pound of base stock these UOP antiozonants will perform for years to prevent ozone cracking, even under severe atmospheric exposure.

All UOP facilities and technical personnel are at your disposal for counselling on your particular antiozonant needs. A phone call, letter or wire will put them to work for you right away.



Rubber Strip Tests Show Effectiveness of UOP Antiozonants

The two rubber strips above were inserted in an ozone cabinet under identical, controlled conditions. The rubber in the sample shown on the right did not contain an antiozonant and reveals marked ozone damage. The SBR sample on the left contains two parts phr of a UOP antiozonant and reveals no ozone cracking after equal exposure.

UOP 88* and 288*

RUBBER ANTIOZONANTS

* *Registered trade marks of*

UNIVERSAL OIL PRODUCTS COMPANY

30 Algonquin Road, Des Plaines, Illinois, U.S.A.

Available in England through Universal-Matthey Products Limited, Stockingswater Lane, Brimsdown, Enfield, Middlesex. Telephone HOWard 4066/7/8. Cable and telegrams Unimatthey, Enfield.

Registered Office: 78 Hatton Garden, London, E.C.1.

Questions Corner—65

(Second Series)

279. Enumerate some of the properties of cellulose acetate rayon.

280. Are there any natural products which are used in the production of phenolic resins?

281. What types of polyvinyl ethers are produced on a commercial scale?

282. Formaldehyde is reacted with phenols to form thermosetting resins of great commercial importance. Can other aldehydes be used?

(Answers next week)

Answers to Questions Corner—64

275. Water dispersions of polysulphide polymers have been produced and vary in the halide component used. The particle size is greater than that of rubber in natural rubber latex. Following are some brief details of commercial types.

Type MF.—This type is based on a polymer having an average structure of a trisulphide but the other types are manufactured as a disulphide. The halides used are ethylene dichloride and dichloroethyl formal. Particle size 4–8.

Type MX.—The halides used in this case are ethylene dichloride and propylene dichloride. Particle size 2–6.

Type WD-2.—In this type, dichloroethyl formal and trichloropropane are used. Particle size 8–15.

Type WD-6.—This uses thylene dichloride and propylene dichloride. Particle size 2–6.

The solvent resistance of these polysulphides is best when ethylene dichloride is used in their preparation. Also, the odour is less.

The use of propylene dichloride makes the polymer softer, but does not affect the solvency resistance to any appreciable extent. The percentage of propylene dichloride in Type WD-6 is higher than in that of type MX and this enables one to obtain a film with the former direct from the water dispersion.

276. Phenol - formaldehyde and cresol - formaldehyde resins are not soluble in drying oils so that some modification is necessary before phenolic resins can be used with drying oil varnishes.

There are several ways in which this can be done, the most important being: a. The use of higher aldehydes, or b. By using substituted phenol, or c. By modification of the phenol-formaldehyde resols by reaction with unsaturated organic acids or alcohols.

Phenol - acetaldehyde novolaks are somewhat soluble in drying oils and if butyraldehyde, and higher aldehydes, are used the novolaks are readily soluble. Generally, phenols with a single substituent in the o- or p-position will give an oil soluble resin on reaction with formaldehyde, but those having the p- and o- positions free give insoluble resins.

Resins from o-alkyl and o-arylphenols are usually soluble, and the oil solubility can be improved by reducing their hydroxylic nature. Novolaks are more soluble than resols and resins made by reacting phenol-ethers with formaldehyde are oil soluble. The most popular substituted phenols, used for the production of oil soluble resins, are p-phenylphenol, p-tert-amylphenol and p - tert - butylphenol. (BP 347,737; 334,572; 417,122.) Xylenols are also used.

277. In the formulation of pigment pastes for the production of emulsion paints consideration must be given to those materials which are used to assist good pigment dispersion, stabilize the dispersion itself as well as the nature of the pigment. First of all are the wetting agents which reduce the surface tension at the pigment-water interface. These are distinct from dispersing agents which, by absorption, physically disperse the pigments through charge transfer to the pigment surface. Finally the stabilizers which increase and stabilize the viscosity of the water phase.

As polyvinyl acetate emulsions used for paints are either anionic or non-ionic it is unwise to use cationic agents of any type otherwise this may upset the stability of the emulsion when the pigment paste is added. Most of the agents used have all the above properties, *i.e.*, act as wetting agents, dispersing agents or stabilizers, but it has been found that a combination of agents is better than one all-purpose type, *e.g.*, methyl cellulose acts as a wetting agent and stabilizing agent so that the addition of a dispersing agent is indicated, *e.g.*, a low molecular weight polymethacrylate.

Finally, of course, there is the pigment itself which includes the primary pigments, extenders and fillers.

Primary pigments include anatase and rutile titanium dioxide, the latter may be coated or uncoated, lithopone, cadmium pigments, synthetic iron oxides, phthalocyanine blues and greens, etc. Prussian blues and ultra marine blues should not be used owing to their poor alkali or acid resistance.

278. The Elastomer Process for the production of open-cell PVC is described in USP 2,666,036, and briefly consists of the following process: The PVC-plasticizer mixture is placed in a closed container having mechanical strength sufficient to withstand pressures of 1,000 psi or more. The capacity should be twice the volume of the resin mixture. The paste is then subjected to carbon dioxide maintained at a pressure between 100 and 800 psi, and cooled by refrigeration. At this pressure the gas is absorbed and dispersed through the paste.

In order to ensure efficient foaming, it is important to expose large surface areas of the paste to the gas, and this may be accomplished by several means. The paste can be kept in constant motion by bubbling the gas through the base of the container upward to the top. If alternatively the gas is introduced at the top then the paste must be mechanically agitated. Another method is the suspension of a number of cylindrical screens in the vessel arranged concentrically. The paste is discharged into the vessel through a nozzle situated immediately above the screens and is then squirted on to the screens flowing down in relatively thin layers, both surfaces of which are constantly changing and exposed to the gas. The foamed paste finally collects at the bottom where it is discharged and fused.

Both density and cellular structure of the fused foam depend on the exact gas pressure and efficient absorption. Low pressures and insufficient absorption produce heavy coarse-celled products, and *vice versa*. Foams having a density of 4-30lb./ft.^{3} can be produced.

The continuous production of PVC foam is important and sheets of up to 4½in. thick can be produced, using high frequency dielectric heating. The foam is sprayed on to a conveyor belt and doctored to the pre-determined thickness, and then passed between the electrodes of a dielectric heating unit. Fusion takes place in a few seconds. Ordinary convection heating is not suitable as, owing to the poor thermal conductivity of the foam, collapse of the cell structure will occur.

(More questions next week)

'PTFE — short for that town in Wales, Llanfairpolytetrafluoroethylenegogogoch'

MEN *and* MATTERS

A Review of People and Events

by George A. Greenwood

AN event of the past few days has been the annual meeting of the British Plastics Federation, reported elsewhere, and the election to the presidency of Mr C. H. Glassey, managing director of British Industrial Plastics Ltd., in succession to Mr H. V. Potter, of Bakelite. Mr Potter has, I think, now completed the full term as head of the Federation, during which he has by common consent rendered it conspicuous service.

It is certain that Mr Glassey will do the same. He is perhaps less well known in London or nationally than his predecessor, for he is essentially a Birmingham man, born, bred, educated and established there, and most of his working and personal life is spent in the Midlands city, for he is not only managing director of BIP, but also chairman of its numerous subsidiaries which function principally in that part of the country. Mr Glassey, now in his sixties, has had an association stretching over 52 years with his present firm, to which he went straight from King Edward's Grammar School at Birmingham, and there is no man in this or any other country who knows more about the industry to which he has given his life. Incidentally, I hear, he went back to his old school, that ancient foundation in Birmingham, a few weeks ago, and addressed the pupils in a very friendly and familiar way about life and its problems and prospects. Another thing to be said about him is that he is a great and inveterate traveller, and in fact he has only just returned from a business trip more than half way round the world, which took him to, among other places, America and Australia.

Mr Glassey has the reputation, well deserved, I am sure, of being the kindliest and most human of men, with a genuinely avuncular personality. 'I wish to goodness he were my uncle,' remarked a much younger man who knows him well to me fervently, just after his election to the presidency. Added to these qualities is Mr Glassey's sense of quiet, subtle humour, which is as much evident in the office and the factory as it is on the platform, or across the luncheon-table. He is married, but without a family and he lives modestly in a flat in a Birmingham suburb—Edgbaston, I believe. The only other thing I have to report about him is that he is what we used to call, in the old days, 'a glutton for work.' I am told that he has no hobbies other than his quiet domestic life. In some respects he resembles the late Gordon Selfridge, who told me 40 years ago that 'there is no fun like work.' But I am sure Mr Selfridge used to say that with his tongue in his cheek! At least he had other forms of fun!

One of Mr Glassey's friends says that his faith and trust in his staff is a lesson to us. 'If I worried about the ability of my colleagues,' he recently told this man, 'I would be foolish. I employ them as experts, and I expect them to be so.' How wise of him!

Paul Litchfield

A host of people in the rubber industry in this country will have heard with deep regret of the death on Wednesday of last week at Phoenix, Arizona, of Mr Paul Weeks Litchfield, honorary chairman of the board of directors of the Goodyear rubber organization. He was 83, and a leading figure in rubber on both sides of the Atlantic, he had been associated with Goodyear for approaching 59 years.

In many respects Paul Litchfield *was* Goodyear. It was in its infancy when he joined it, and his was probably the larger hand in making it the biggest maker of tyres, and later the largest rubber manufacturer in the world. His career was almost a phenomenon, for he started in his early twenties as superintendent of all production, development and engineering, and in six years—by the time he was 30—he was on the board. Nine years later he became vice-president, and was elected president of the company in 1926. To this office he was re-elected in 1930, and it is only about three years ago since he handed over his responsibilities as chief executive of the organization to Mr E. J. Thomas, the president of the company. He took the title of honorary chairman of the board in 1958, when Mr Thomas became chairman.

It is pleasant to hear people say that he was a good and understanding friend of this country, and looked with pride on the achievements of the Goodyear organization here.

Friend in Sweden

There is a warm and interesting tribute in the Spring issue of the *BBA Journal,* the house organ of British Belting and Asbestos, which

Mr Harold Watkinson, Minister of Transport and Civil Aviation, whose visit to Microcell was referred to last week, discusses glass fibre technology with Mr D. J. Hodgson, one of the Microcell directors. On Mr Hodgson's left is Mr Henry Kremer, chairman and managing director of Microcell Group, and on his left, watching the process, is Sir Graham Hayman, chairman of BTR Industries, the group with which the Microcell Group is now merged

has just reached me from headquarters at Cleckheaton, to one of its widely-known overseas representatives! This is Mr Axel E. Benzler, of Sweden, who will, I gather, soon have completed 15 years' service as export agent in that part of the world.

The association began through contact with the Federation of British Industries, just before the war ended in 1945. Apparently, 'Sweden had long been self-supporting and sufficient in belting, but in the asbestos textile and friction lining fields, a substantial share of the market was rapidly achieved in the immediate post-war years.' The journal adds that more recently, competition has become very severe, as the German manufacturers have striven to re-enter the market but the organization built up by Mr Benzler has been able to maintain the company's position.

Mr Benzler spent the early years of his life mostly in Russia, where his father was an executive of the famous Swedish Match Corporation. He was in St. Petersburg, now Leningrad, during the 1917 revolution, was later in the various Baltic Republics and Poland, and returned to Sweden in 1943. Mr Benzler, who has, of course, a large number of British friends, is an authority on fine antiques and paintings, and he is an enthusiastic yachtsman.

Anglo-American Plastics

Mr Bernard Hoole has recently been appointed to the Sales Organization of Anglo-American Plastics Ltd. (one of the Commercial Plastics group of companies), of 1 Avery Row, Grosvenor Street, W.1. Mr Hoole has had considerable experience in the packaging and extruded plastics fields, and will now be promoting the use of 'Fablothene' polythene film in a wide range of industries.

Chinese Scientific Literature

The Lending Library Unit of the DSIR has, I understand, started to collect Chinese scientific literature. About 150 Chinese periodicals are now on regular order and the first batch has arrived at the library's London premises. Already the Lending Library Unit is noted for its large collection of Russian scientific literature, which is available to research, industrial and other organizations, through a loans service.

The library also organizes a scheme for the translation of Russian scientific literature, in collaboration with the National Science Foundation in the United States. This may possibly be extended in the future to include scientific literature from China. Meanwhile, the contents of these Chinese publications must be assessed, and a scientist with a knowledge of Chinese is being recruited by LLU to select and promote use of Chinese scientific and technological literature. The Lending Library Unit in London is the nucleus of the new National Lending Library for Science and Technology, which will be set up at Thorp Arch, near Boston Spa, Yorks., in 1961.

American Visit

Mr P. F. Schidrowitz, managing director of Latex Process and Dispersions Co. Ltd., Bury, Lancs., is shortly to pay a visit to the company's American associate, the General Latex and Chemical Corporation, of Cambridge, Mass. While in America, Mr Schidrowitz will tour one of the largest synthetic rubber-producing plants in the country.

Suggestion at SHMA AGM

At the annual general meeting of the Sole and Heel Manufacturers' Association (Rubber, Synthetics, Plastics), held in London on March 19, the retiring chairman, Mr W. T. L. Becker, spoke of increasing imports of soling materials from countries of the European Common Market at prices which British manufacturers were convinced bore no relation to the cost of production. 'It does not make economic sense,' he said, 'to allow any efficient industry —and we are only one of many—to shrivel or die in the wind of foreign competition.' He suggested that an increase in existing protective duties to meet the existing situation might be coupled with a proviso that they should then be subject to a progressive reduction over a period of years, on the model set by the Common Market itself. This would afford a breathing space in which some balance of prices might be achieved without conflicting with the ultimate objective of trade liberalization.

Mr W. G. Smith, Avon Footwear Sales Ltd., and Mr F. H. Roberts, Dunlop Footwear Ltd., were elected chairman and hon. treasurer, respectively, for the year 1959-60.

The first international conference of the Institute of Materials Handling will be held in London on May 6-8.

E. C. Lacey

Mr Edwin Charles Lacey, F.C.S., F.I.R.I., M.I.M.E., chairman of C. E. Heinke and Co. Ltd., 87 Grange Road, London, S.E.1, died at his home at West Norwood on March 13 in his 93rd year.

Mr Lacey was born in Norwood in 1866 and received his early technical training at the City and Guilds Institute and later at Edinburgh University. He was a member of the Society of Chemical Industry for nearly 70 years, having been elected in 1890.

His career in the rubber industry commenced in 1894 when he joined Foster and Williams, rubber manufacturers. In 1902 this firm amalgamated with C. E. Heinke and Co. Ltd., submarine engineers and makers of diving apparatus. Mr Lacey then became a partner in C. E. Heinke.

He was associated from its earliest days with the Research Association of British Rubber Manufacturers, serving on a number of its committees and acting for many years as its honorary treasurer. He was elected a Fellow of the Institution of the Rubber Industry in 1942 and also had been connected with the Electrical and Allied Industries Research Association.

One of Mr Lacey's interests apart from business was the Norwood and District Nursing Association. A keen amateur gardener and a great lover of flowers, he was a member of the Royal Horticultural Society. Photography also claimed his attention as a hobby as far back as the days of the wet plate process. Of his less active hobbies, reading scientific literature and listening to choral music provided him with much pleasure until a few days before his death.

Philblack E (SAF)

Philblack Ltd., Henbury Road, Westbury-on-Trym, Bristol, has commenced commercial production at its Avonmouth plant of Philblack 'E' Super Abrasion Furnace (SAF) Black. This grade is available for immediate delivery at 1s. 1d. per lb., in minimum 3-ton lots, loaded ex-works Avonmouth. All enquiries should be directed to the company's selling agents: R. W. Greeff and Co. Ltd., Garrard House, 31/45 Gresham Street, London, E.C.2.

Mr A. G. Dennis, chairman of Webley and Scott and of the R. H. Windsor group of companies, has joined the board of Contanglo Banking and Trading Co.

The Prospects of Plastics

MR H. V. POTTER ON THE NEXT 25 YEARS

VAST increases in the production of plastics materials in the next two and a half decades, reaching a world figure of 50 to 60 million tons in about 25 years, were predicted by Mr H. V. Potter, president, in his speech at the annual general meeting of the British Plastics Federation on March 18.

On this, the 25th anniversary of the formation of the Federation, said Mr Potter, he felt that they were entitled to congratulate themselves on the progress of the organization as a result of the growth of the industry. He did not propose to comment on the progress over the last 25 years but to look into the next 25 years and see where the progress was likely to lead them.

'We have reached a stage,' said Mr Potter, 'where we can see great changes in methods of construction in many industries as a result of the more recent developments with new plastics and new methods of applying them.

'Light but strong sections for car bodies are already being made of glass fibre with bonding materials of plastics. What could this lead to with what advantage? Weights would be cut down thus giving lower petrol consumption and greater load capacities.

'I can conceive that the next advance in auto transport could be a light motor car fitted with a rotor which can be opened out over the roof of the car to enable it to be lifted in fashion similar to a helicopter. . . . Let's call it the auto-helicopter. It may seem fantastic but I consider it is a logical development as a result of plastics' light construction. Such a conveyance would be very largely dependent on light weight which is now feasible with reinforced plastics construction.

'Glass fibre sheet treated with plastics will be made continuously in the future in the same way as sheet steel is made and when this becomes possible, as I am sure it will, then we are certain to produce car bodies, panels and parts pressed to shape very cheaply instead of the handwork involved with the present reinforced plastics.

Construction Materials

'Prefabricated parts and bearing members will be a feasible proposition and owing to lightness and ease of fixing will be a great boon to architects and contractors. These will be in large dimensions and constructed to take heavy loads.

'It will be possible to construct bearing members *in situ* by assembling the fibrous material in a temporary wood mould and pouring the plastics binder into the box frame in the same way as reinforced concrete stanchions, etc., are made today.

'All these possibilities will depend on cheap raw materials and I see no reason why slag fibres should not be made as a reinforcing material and thus use up some of the slag dumps around the blast furnaces.

'As to the use of plastics as a secondary medium in house and factory buildings, these are already being used instead of brick filling and this is bound to increase as the material becomes relatively cheaper and labour becomes more expensive.

Domestic Uses

'What great developments we have seen in the production of plastics articles for the house today! They run into thousands and most of this has arisen since the discovery of thermoplastics.

'It will not be long before the chemists will discover a plastics which is pliable but with heat resistance above that of boiling water or, say, to 300°F. Then lead and iron domestic water pipes will disappear and along with it the burst pipe. What a joy to the property owner. I am sure it will not take 25 years to discover this. Cold water pipes in plastics are already in large-scale use.'

Plastics, went on Mr Potter, entered in the aircraft industry in many ways but it was certain that with careful testing of new plastics constructions, these products would enter into the load-bearing parts of airplanes and over the next quarter of a century there would be a complete plastics construction apart from prime moving parts and the electrical equipment. . . .

Copper-faced Laminates

The president went on to mention the use of copper-faced laminates with printed circuits for the control of the movements of complicated machinery, and the introduction of plastics insulation into trans-Atlantic telephone cables which had revolutionized the transmission of speech across vast areas.

'World tonnage of plastics in 1957-1958,' said Mr Potter, 'was in the order of three million tons production. At the present rate of expansion it might reach 50-60 millions in about 25 years.'

Enjoyable Term of Office

Mr Potter continued, 'I have enjoyed my period of office and all the many friends and associations I have made. I have been very happy to be associated with part of the term of office of our present chairman, Norman Punfield, who has carried out his duties in such an able and considerate but firm manner. I thank him for the patience and courtesy he has always shown us all and I wish the new president every success in his period of office.'

Rubber's Record Outlook

AUTOMATED MANUFACTURE

AT a meeting of the New York Society of Security Analysts, Mr H. E. Humphreys Jun., chairman of United States Rubber Company, who is also chairman of The North British Rubber Company of Edinburgh and Dumfries, revealed that the American company expects record sales of 950 million dollars in 1959. The company, he said, had rebounded from the 1958 recession, and, with a rising recovery, will benefit more and more from vigorous cost cutting and efficiency programmes.

'The first quarter of 1959 is off to a good start,' said Mr Humphreys. 'The industry's rubber consumption for this quarter is expected to set a new record of 417,000 long tons. Replacement tyre sales are running at an annual rate of 63½ million units, two million more than the record set in 1958.'

Speaking of tyre production, Mr Humphreys added: 'We are in the midst of a concentrated programme to apply automation to the manufacture of tyres which, when completed, will reduce the time required to process a passenger car tyre from 48 hours to less than four hours.'

'By acquiring a majority interest in Englebert, we have gained large new sources of manufacturing in Belgium, France and Western Germany. This investment represents the largest American rubber company interest on the European Continent. It gives us an opportunity to take part in the most promising future of the European Common Market.'

New BPF President

AT a meeting of the Council of the British Plastics Federation after the annual general meeting held on March 18, the honorary officers were elected for the session 1959-60 as follows:

Mr C. H. Glassey, managing director of British Industrial Plastics Ltd., new president of the British Plastics Federation. Reference is made to Mr Glassey in 'Men and Matters' on page 479

President, C. H. Glassey. *Chairman,* N. B. Punfield. *Vice-Chairman,* D. Radford. *Hon. Treasurer,* R. P. Anderson.

Members of Council are now as follows: G. Allan, R. P. Anderson, C. S. Bache, S. R. Badley, D. H. Balfrey, S. Baxter, H. V. Blake, N. Browne, L. R. Cornelius, J. V. Crossley, C. M. Edwards, A. Gundry, T. Harland, H. F. W. Head, A. A. Heath, S. Hope, G. C. Hulbert, E. C. W. Huson, E. Gibson Knight, R. W. Lowe, D. E. Lowndes, R. E. McOnie, C. L. Malcomson, E. A. O. Mange, B. E. M. Miller, C. J. F. Mitchell, T. R. Monkhouse, D. G. Owen, J. A. Pentecost, C. D. Philippe, K. Pollard, E. J. P. Reynolds, G. G. Ritchie, P. Russell, A. E. Skan, D. Sullivan, C. R. Todd, F. T. Walker, J. S. Walker, R. H. Wilby, C. G. Wilde.

The Publicity Committee for 1959-1960 is composed as follows:

Chairman, J. V. Crossley (Imperial Chemical Industries Ltd.), R. Buckley (Kent Mouldings Ltd.), J. N. Gibson (Monsanto Chemicals Ltd.), S. Gorden (R. H. Windsor Ltd.), G. C. Graver (British Geon Ltd.), J. Parry Green (Fibreglass Ltd.), E. W. A. Jefferies (Bakelite Ltd.), R. MacDonald Watson (BX Plastics Ltd.), P. I. Smith (Imperial Chemical Industries Ltd.), D. Wolfers (Shell Chemical Manufacturing Co. Ltd.). *Ex-officio:* N. B. Punfield, D. Radford, C. C. Last.

Plastics Scrap Pulverizer

The prototype of Hungary's first pulverizing machine for plastic scrap has been produced in Budapest. Capable of pulverizing and rendering reusable about 3 tons of plastic rejects and offcuts per month, it is powered by a 7 kw electric motor. Granulation can be graded as required and it is claimed that weight loss during processing is minimal. Construction of a larger machine to handle 15 tons of material per month has started.

Blaw Knox Appointment

Blaw Knox Chemical Engineering Co. Ltd., announce the appointment of Mr Alan Sanderson, A.M.I. Mech.E., A.M.I.Gas.E., as sales manager. Mr Sanderson has had experience in the heavy engineering and process plant industries gained during his employment with plant suppliers, consultants and process operators.

Rubber and Plastics in South Africa

NEWS OF FIRMS AND PRODUCTS

PURGLASS (Pty.) Ltd., 77 Canada Road, Durban, are manufacturing a comprehensive range of fishing rods from Sealite glass fibre tubes. All the rods are delivered to the retailers guaranteed free from irregularities and impurities. Although the rods are particularly light they are also very strong and flexible. These fishing rods are being made in all the different types in demand among South African anglers.

Plastic Swimming Pool

The African Clothing Factory Ltd., P.O. Box 1098, Cape Town, are making in a plastic material a portable circular swimming pool for children, in the dimension 7ft. 6in. wide and 2ft. deep. The manufacturers claim that it is completely waterproof and designed to withstand rough usage. This item retails at a little under £12 and the sides are of hardboard, with the covering substance PVC-treated Maxron.

Wide Rubber Range

The South African Rubber Manufacturing Co. Ltd., P.O. Box 29, Howick, Natal, state that they are making some 10,000 different rubber items for transport and industry in South Africa and as the need arises new items are added to the range. All these rubber goods are specially designed for local conditions. In the automotive field they are providing radiator hoses, fan belts, rebound rubber, shackle bushes and many other items.

Sewage Buckets

The Wayne Rubber Co. (Pty.) Ltd., 219 South Coast Road, Durban, state that the new rubber sewage buckets that they are selling on the local market were submitted to searching test by the Durban Municipal drainage department before they were mass produced for the South African market. It is believed that hotels, institutions and other large users of night soil buckets will prefer this durable rubber product to the sheet metal buckets used in the past because among other things they are noiseless.

Alkathene Ware

A number of South African hardware manufacturers are now producing Alkathene domestic ware from raw material supplied by the Imperial Chemical Industries' organization in South Africa. The current advertising campaign is making this polythene material better known in South Africa. As it is light, rust and chip-proof, almost unbreakable and hygienic, it is likely to be used to produce many types of utensils in the Union.

Plastics Institute Awards

The Council of the Plastics Institute has made the following awards:

Fellowship (F.P.I.): H. Jones, B.Sc.Tech., A.M.C.T. (Geigy Co. Ltd.). Associateship (A.P.I.): P. I. A. Martin, B.Sc. (W. T. Henley's Telegraph Works Co. Ltd.), P. J. Weetman, A.C.T.(Birm.) (Motoplas Ltd.). Graduateship: B. Schreiber, B.Sc. (Eden Vale Plastics Ltd.). Diploma: M. F. Brain, G. A. Brittan, T. W. Courtney, B. F. Moore, D. R. Parker, T. G. Price.

Sir James Mitchell has been appointed a director of the Sandac Rubber Estates Ltd.

Education and Publicity

CHAIRMAN'S LECTURE TO PI LONDON SECTION

THE London Section of the Plastics Institute on March 17 heard their chairman, Mr D. S. Mahon, give the current session's Chairman's Lecture. Mr Mahon, whose paper was entitled 'Plastics—Why Should I Worry?' first showed a short and entertaining film. This told amusingly, and to the accompaniment of intriguing sounds, the story of ten little mouldings and their sad fate. It illustrated the flagrant misuse and ill-treatment of plastics articles by a housewife untutored in the properties and limits of the materials.

Mr Mahon then took up his main theme of the need to educate the public. The industry, he said, depended upon the public, and the British public were critical. The best advertisement for the industry was satisfactory equipment. He was not suggesting that many of the plastics articles on sale were deficient in any serious way. What was lacking was public knowledge of the merits and shortcomings of the plastics articles they bought. He thought the Plastics Institute should take its full responsibilities in educating the public.

At present, said Mr Mahon, there were, in effect, two extremes. On the one hand public confidence in established materials based on years of experience with them and, on the other, confidence in newer materials largely as a result of education by advertising.

Larger Share

Education of the public, it could be said, was not an Institute job. There was the British Plastics Federation, which had its own publicity committee; there was the trade Press, its effect possibly limited by reason of circulation; the national Press, sometimes guilty of the wildest mis-statements, and there was the British Standards Institution, concerned with an enormous range of specifications. Of these, he said, he believed the Plastics Institute should take the larger share in public education.

Mr Mahon referred to the aims of the Institute as outlined in the constitution, and to the efforts of the Education Committee. The effectiveness of their work was shown by the steady increase in the figures for registered students from 62 in 1952 to 175 in 1957. This meant that an increasing stream of young men was coming into industry from the technical colleges.

On the question of membership, he said it was clear that the activities should be extended. He suggested a new form of membership to cater for those in the fringe industries who might already be members of other institutions; possibly with a reduced subscription rate and the right to buy Institute literature at special rates, but not necessarily with voting powers.

Technical Body

He thought also that a technical body of the Institute should be set up, the members of which should be available to answer technical questions, particularly from the national Press. He suggested also that there should be available from the Institute a list of lecturers who were prepared to go out and talk to a wider audience.

Many members contributed to the animated and useful discussion which followed the lecture, and particular emphasis was laid on the desirability or otherwise of a public relations set-up within the Institute. Mr A. B. Merriam said that one of the main failings of the industry had been its inability to give good names to plastics articles. There were only one or two names known nationwide. It was essential that more names should be generally known, and there should be new names both pronounceable and understandable. He thought the Institute and the Federation had failed in this respect.

Mr B. C. Aldis pointed out that the Institute was represented on various technical committees of the British Standards Institution. Regarding names, he said, the BSI was at the moment considering nomenclature, and the Federation was represented on this committee. Another member suggested that it was the responsibility of each member to do his own job of public relations, and a further suggestion was that more use should be made of the Federation's Information Service.

Mr P. Moxey said that the best way to reach the public was through the national Press. The cost would not be less than £100,000 a year. He thought that a public relations department should be set up within the industry, and he instanced the examples of the leather, wood and aluminium industries. It was time that the plastics industry woke up to the vital nature of the problem.

Mr S. B. Turner thought that public relations work was the Federation's function. The Institute could advise but he could not see the Institute, as a professional body, ever having enough money to do the job. He echoed Mr Mahon's statement that there was a great need for bringing in those on the fringe of the industry.

Another member raised the question of qualifications for associate membership of the Institute and thought that these should be reviewed. There were many on the fringe who had qualifications which should entitle them to associate membership without taking the rather formidable examination syllabus. Mr Mahon replied that the Institute was considering this question and that an announcement would be made shortly.

Mr J. V. Crossley added that the Institute was doing much to enrol as many qualified men as possible. However, it was only by making the road hard that they could ensure the standards were as high as they should be. Routes were now open for qualified men to become associates with little or no examinations. Mr Crossley went on to say that he was a great believer in public relations, but it was a question of finance. If plastics were to be put over as they should be, expenditure would be of the order of £500,000 a year. He thought the industry could well afford it. If all the industry would play its part, he estimated that the cost to each member company would not be more than 0.1% of its turnover.

Mr P. Smith suggested that there was need also for education within the industry. He thought that discussion groups should be encouraged.

Nomenclature

Dr C. V. Child stressed the importance of nomenclature. Descriptive words of one or two syllables were required. On membership, he said that company membership did not necessarily detract from the jealously-guarded individual nature of membership of a professional body. Other bodies had companies as 'supporting' members. Referring to the Institute's educational committee, Dr Child thought this too large. Also, it spent its entire time on the question of the education of students. The committee, he suggested, should be split; part to continue its current work, part to look after the members themselves, and part to undertake public relations work.

Time eventually brought a very lively session to a close with many members still hoping for a chance to add their contributions, and the meeting closed with a vote of thanks to Mr Mahon, proposed by Mr A. B. Merriam.

Thomas John Cumming

An Appreciation

Tom Cumming, whose death occurred at Lagos on March 5 at the age of 76, left a fine record of personal achievement and public service. Going to Malaya in 1906 from the North of Scotland Bank, Turiff, Aberdeenshire, he received his early training on the Seafield and Batu Caves Estates, and became manager of Seafield in 1912, a position which he held until his retirement from Malaya in 1927, when he became rubber-planting technical adviser to Messrs Morison, Rutherford and Co., London. After 20 years' residence in Sutton, Surrey, he made his domicile in his beloved Highlands.

During his management of Seafield he became expert in all the operations involved in rubber growing, and established a reputation for his handling of Asian labour. He also accumulated a wide experience in the capacity of a visiting agent and it was inevitable that his help should be sought in the wide fields of administration and co-ordination of planting interests generally. Thus:

He was a member of the Malaya Assessment Committee in the Stevenson restriction period 1922/28 and in that connexion in company with the Netherlands East Indies representative, inspected and made the official report on the native plantings and production of the Djambi province of Sumatra.

During 1921/27 he was Chairman of the Malayan Planters' Association on four occasions.

In 1922 his experience in labour matters led to his becoming a member of a deputation to India to discuss the application of the Indian Emigration Act to Malaya.

In 1924 he became President of the Association of British Malaya.

In 1928 he was elected to the Council of the Rubber Growers' Association, becoming chairman of that body in 1936.

In 1943 he was a member of a Mission to report on rubber production in British West Africa for the Ministry of Supply and made an extensive tour of Sierra Leone, the Gold Coast and Nigeria including the British Cameroons. These were very strenuous days.

The year 1946 found him leading a team to get Malayan production organized after the defeat of the Japanese.

In recent years he was a prime mover in new planting projects in Nigeria, but he overtaxed his strength during his visit there in February last.

Immediately prior to his death he was chairman of the board of directors of six rubber companies and a board member of six others.

Cumming was something special amongst men; a gentle and kindly knight of self-effacing modesty, who will be remembered by his many friends for his inherent worthiness expressed in what he did and stood for.—G.E.C.

Canadian Asbestos

Shipments of asbestos from Canadian mines were smaller in January, falling to 54,668 tons from 63,120 in the preceding month and 57,450 in the corresponding month last year. Exports in January amounted to 71,174 tons, smaller than December's 81,386 tons but larger than last year's January total of 51,761 tons.

Training in marketing theory to help Britain's future sales executives to meet harder competition in markets here and overseas, was the theme of a conference held by the Student Society of the Incorporated Sales Managers' Association at the College of Distributive Trades, London, on Tuesday.

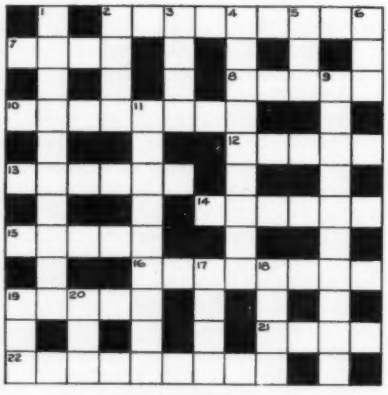
Trade Commissioners

Mr J. F. Saunders, M.B.E., at present United Kingdom Trade Commissioner at Vancouver, has been appointed by the Board of Trade to be United Kingdom Trade Commissioner in Hong Kong in succession to Mr G. B. W. Harrison who is returning to the United Kingdom. Mr Saunders is expected to arrive in Hong Kong at the end of April. Mr W. K. Ward, an Assistant Secretary of the Board of Trade, has been appointed to be United Kingdom Trade Commissioner in Vancouver and is expected to arrive there in June.

Cape Asbestos Move

The offices of Mr James L. Thomas, Scottish Area manager of The Cape Asbestos Co. Ltd., and his staff have moved to a new building in the Springburn district of Glasgow. Their address is now: Hobden Street, Petershill Road, Glasgow, N.1 (Telephone, Springburn 6144). This is also the new address of Mr A. Armour Clark, Scottish Area representative of Cape Building Products Ltd., subsidiary of Cape Asbestos.

RJIP CROSSWORD



CROSSWORD No. 66

CLUES ACROSS

2. Amorphous carbon.
7. Before. Sodium is backed up to Tellurium symbolically.
8. The smallest amount given by the mixed slate.
10. This accelerator has two coats in the beginning.
12. See 14 across.
13. A poor imitation initiated by a golfer's term.
14, 12. The ambition of some investors who are not necessarily keen swimmers (3, 3, 5).
15. To cleanse and resin again.
16. Studying hard for an examination.
19. Vulgarity becomes them. Son, change around and join British Standards in a small way.
21. The speed at which the deserter starts.
22. A monomeric constituent of some synthetic rubbers.

CLUES DOWN

1. Some rubbers and plastics are used for this in the cable industry.
2. A new one is turned over when one's conduct improves.
3. A North African backroom.
4. This pen is the crux of the dance (4-5).
5. A palindromic girl's name.
6. The soldier's baggage.
9. The plus on a mix up forms this type of peptizing agent.
11. Having no clothes on.
17. . . . upon a time, another cone. . .
18. One of the rubber industries' main products is found in styrene.
19. Cry when 19 across loses two points.
20. Lions leave solution and are therefore not in.

(Solution appears on page 491)

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Rubber Statistics

UNITED KINGDOM — CEYLON — FRANCE — BRAZIL

FINAL details are now available of the UK rubber position at the end of the year.

Consumption of natural rubber during December, which was a five-week period, amounted to 16,519 tons, giving a weekly average of 3,303 tons compared with the November weekly average of 3,547 tons (December 1957, 3,530 tons). The December consumption brought the total for the whole year to 175,460 tons (1957 total, 181,619 tons). In the case of natural rubber latex, which is included in these totals, consumption in 1958 amounted to 26,207 tons (24,960 tons).

The synthetic rubber consumption total for the year stood at 62,979 tons (1957 total, 57,402). The December consumption amounted to 6,214 tons, giving a weekly average for the month of 1,242 tons, compared with the November average of 1,303 tons.

Stocks of rubber on hand at the end of the year totalled 12,430 tons in the case of synthetic and 29,886 tons in the case of natural, including 4,776 tons of natural rubber latex.

Ceylon

The final breakdown of Ceylon's estate production of rubber has now been released. This shows that estate production during 1958 totalled 83,814 tons, 11,886 tons having been produced in the fourth quarter compared with 10,786 tons in the third quarter. Of the total amount, 50,450 tons consisted of sheet rubber, 799 tons of sole crepe, 6,828 tons of scrap crepe, 25,032 tons of latex crepe and 705 tons of latex.

Exports, including both estate and smallholders' rubber, from Ceylon during 1958 amounted to 90,420 tons. The UK took 17,123 tons of these exports, while 12,204 tons went to the US, 14,596 tons to Western Germany, 23,640 tons to China, 7,440 tons to Japan, 3,478 tons to Canada, 2,594 tons to Italy, and 2,204 tons to Russia. The exports to China and Russia were almost entirely of sheet rubber and represented just over half of Ceylon's total output of sheet rubber.

France

The Secretariat of the International Rubber Study Group has now issued details of France's rubber position up to the end of October last.

This shows that, during the first ten months of 1958, France imported 116,563 tons of natural rubber, including 10,884 tons of natural latex (1957 totals 119,890 tons and 8,169 tons respectively). Imports from Vietnam totalled 51,570 tons (34,641), while those from Malaya were 49,410 tons (1957, 62,250), thus demonstrating the considerable switch which has taken place from Malayan to Vietnam rubber. Exports during the period amounted to 548 tons, leaving net imports of 116,015 tons (1957, 116,103 tons).

Consumption of natural rubber during these months totalled 105,131 tons of crude and 10,113 tons of latex (1957 figures, 102,589 tons and 8,453). Stocks of natural rubber on hand at the end of October had fallen from the January 1 level of 18,855 tons only very slightly to 18,738 tons, though latex stocks included in these totals rose from 1,178 tons to 1,949 tons.

Imports of synthetic rubber during these months amounted to 48,536 tons. 30,595 tons from the USA and 15,145 tons from Canada, an increase of roughly 5,000 tons on the previous year. They included 31,304 tons of S-Type rubber, 5,827 tons of Neoprene, 8,635 tons of butyl, 1,730 tons of N-Type and 1,040 tons of synthetic latices. Consumption of synthetic amounted to 45,170 tons compared with 41,863 tons a year before, and stocks of synthetic on hand at the end of the period had risen from the January 1 total of 5,451 tons to 8,817 tons.

Brazil

The latest data issued by the Comissao Executiva de Defesa da Borracha show that in the ten months ended October 31 Brazil produced 18,449 tons of natural rubber, including 962 tons of latex. During the first ten months of 1957, production of natural rubber totalled 20,610 tons, the 1958 figure thus representing a drop of over 10%. Imports of natural rubber during the same period totalled 16,187 tons, giving a figure of 34,636 tons of rubber available for consumption, compared with an actual consumption total of 36,769 tons, which included 961 tons of latex. Imports of synthetic rubber during these ten months amounted to 1,359 tons; consumption of synthetic amounted to 1,515 tons. During this period 7,199 tons of reclaim rubber were also consumed.

Rubber Crop Returns

THE RUBBER ESTATE AGENCY LTD.

	February 1959 lb.		Fin. year to date lb.		No. of months
Bandar Sumatra ..	89,500	(80,000)	748,500	(686,023)	7
Batu Kawan	46,900	(39,800)	367,600	(364,659)	6
Buntar	89,000	(71,500)	793,300	(720,800)	8
Eastern Sumatra.. ..	297,850	(270,000)	4,136,350	(3,971,000)	12
Amalgamated Rubber ..	37,400	(38,500)	79,200	(74,800)	2
Java Rubber Plants. ..	88,440	(93,060)	181,060	(182,160)	2
Jeram	283,000*	(187,500)	2,687,500	(2,086,600)	11
Kepitigalla	56,500	(75,000)	662,000	(565,500)	11
Kuala Lumpur	367,720	(308,422)	2,517,890	(2,818,756)	8
Langkat Sumatra ..	73,000	(70,000)	163,000	(160,000)	2
Soember Ajoe	30,800	(31,900)	144,320	(149,600)	5
Sungei Bahru	86,000	(77,000)	1,103,000	(1,150,000)	11
Sungei Chermang ..	183,000	(187,000)	1,709,000	(1,709,000)	8
Sungei Kahang	127,365	(150,600)	1,681,565	(1,652,300)	12
Tambira	87,100	(99,000)	893,470	(948,720)	8
Tamiang (Malay) ..	70,600	(50,000)	374,600	(300,000)	5
Tanjong Malim	303,300	(288,365)	2,870,400	(2,453,600)	8
Sennah	143,000	(136,400)	286,000	(294,800)	2

* Including crop for Tuan Mee estate

CEYLON AND EASTERN AGENCY

	February 1959 lb.	Fin. year to date lb.		No. of months of fin. year to date
Grand Central	733,322	2,094,436	(2,273,919)	2
Nagolle	33,136	103,724	(142,770)	2
Doloswella	14,976	37,396	(36,070)	2
Rajawella	91,297	1,057,465	(954,371)	8
Sunnygama	42,382	146,091	(199,671)	2
Timbang-Deli	85,200	1,068,200	(1,106,000)	11

GEO. WILLIAMSON & CO.

	February 1959 lb.		Fin. year to date lb.	
Ceylon (Para)	122,350	(118,216)	299,651	(301,559)

	February 1959 lb.	
Scottish Malayan Estates	324,000	(362,800)

	February 1959 lb.		Fin. year to date lb.		No. of mths of fin. year to date
Inch Kenneth Kajang ..	130,000	(155,000)	318,000	(355,000)	2
Kemasul	33,400	(35,100)	82,700	(82,100)	2

PATENT SPECIFICATIONS

The following information is prepared from published Patent Specifications. The full Specifications can be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 3s. 6d. per copy (including postage).

Injection Moulding Machine for Rubber

No. 806,062. F. Skelton. Application, July 18 1955. Filed June 8 1956. Published, December 17 1958.

An injection moulding machine for rubber is designed so that the residue of vulcanized rubber left in the injection cylinder can readily be removed. An end view of the machine, partly in section, is shown in the drawing. A hydraulic press, similar as regards its general arrangement to a conventional hydraulic press for pressure moulding, comprises a press head 1 having columns securing it to the main operating cylinder of the press which includes a press table 3. A two-part (or multi-part) mould is provided comprising a top place 4 and a bottom plate 5 which when brought together define one or more mould cavities indicated at 6. The top mould plate 4 is secured to a heated platen 7, while the bottom mould plate 5 is preferably secured to a heated platen 9 although it may be removable. The top and bottom mould plates are provided with lateral extensions as seen at the right-hand side of the drawing and this extension part of the mould is supported by a bracket 5a secured to the press table 3. An injection cylinder 11 open at both ends is shaped to be accurately received in a bore 12 in the top mould plate 4. The lower end of the cylinder 11 opens into one or more channels 14 formed in the upper face of the bottom mould plate 5 and constituting a communication between the lower end of the cylinder and the mould cavity 6. The end face of the cylinder 11 engages the mould face 5b of the bottom mould plate 5. If there are two or more mould cavities, these are interconnected by channels or passages as at 15.

A plunger 16 enters the cylinder 11 to inject its contents into the mould through the channel 14. The plunger is secured to the lower end of a piston rod 17 having a piston or ram slidable in a closed cylinder 18 mounted on the press head 1 and arranged to be operated in any convenient manner.

The lower end of the cylinder 11 has a reduced bore 23 which has the effect of creating a pressure while the material is being injected and thus keeps the lower face of the cylinder in close contact with the mould face 5b. The lower end of the plunger 16 is provided with a reduced lower end 24 the diameter of which is somewhat smaller than the reduced cylinder bore 23. If desired, provision may be made for heating the cylinder and/or the plunger independently in order to induce a faster flow of the injected material. The arrangement is such that when the press is closed in the normal manner the mould plates are brought together and the necessary pressure is exerted thereon to keep the mould closed during subsequent injection. In this position the upper end of the

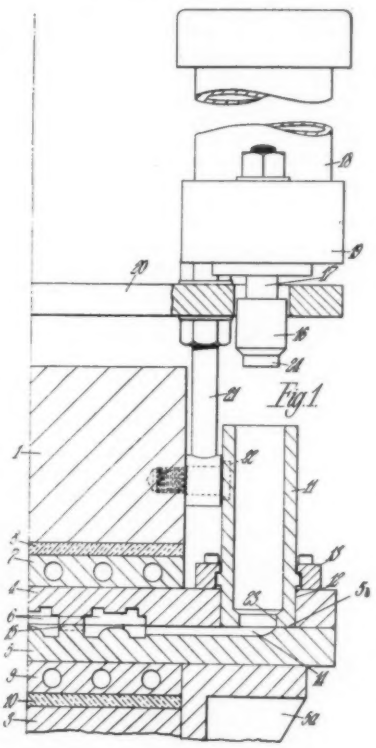

Fig. 1.

injection cylinder 11 is open and the plunger 16 is raised and aligned with it. A slug of rubber compound is placed in the cylinder and the piston or ram is operated to force the plunger down to the lower end of the cylinder, whereby the compound is injected into the mould, after which the moulded article is vulcanized in the usual manner. Due to the dimensioning of the reduced lower end of the plunger, the vulcanized residue in this region of the cylinder has the form of a thin sleeve which is attached to the moulded article by the runner or runners and can thus be extracted as a unit with the moulding.

Polymerization of Ethylene

No. 807,204. Hercules Powder Co. Application and Filed, July 10 1956. Application in USA, July 29 1955. Published, January 7 1959.

The invention is for a modification of the Ziegler process for the polymerization of ethylene according to which the molecular weight of the polythene, as indicated by its viscosity, is controlled within any desired range by the addition of a controlled amount of hydrogen to the polymerization system. The modified process is applicable to the polymerization of any olefin and is of particular advantage when applied to the improved Ziegler process described in Specifications Nos. 789,781 and 795,182.

Numerous examples are given. Most of them relate to the polymerization of ethylene, but some relate to the polymerization of propylene, octene-1 and butene-1, and to the copolymerization of octene-1 with styrene and propylene with isoprene.

Shorter Abstracts

Bearings. 805,539. Howard Clayton-Wright Ltd. Filed, October 10 1956. — A bearing for shafts and spindles has an inner liner of a tough, wear-resistant plastic, preferably nylon, and an outer sleeve of rubber, a rigid backing sleeve, preferably of metal, being disposed between the plastic and the rubber.

Wheel and Tyre Assembly. 805,552. Dunlop Rubber Co. Ltd. Filed, April 3 1956.—The assembly has a tyre constructed according to Specification No. 786,162 (RUBBER JOURNAL AND INTERNATIONAL PLASTICS, February 22 1958, page 308) and a one-piece flat rim base with flanges to engage the tyre edges, the flexibility and extensibility of the beads of the tyre being such that they can readily be passed over at least one of the rim flanges for assembling the tyre and rim.

Reinforced Plastic. 805,770. E. I. du Pont de Nemours and Co. Filed, June 12 1956.—Plastic articles reinforced with glass fibres are made from solid stage condensation products of an organic salt of a diprimary amine with a diester formed by the reaction of pyromellitic anhydride and a volatile monobasic alcohol.

Antioxidants. 806,014. The Goodyear Tire and Rubber Co. Filed, June 4 1956.—Xylenes having two phenolic substituents linked one to each methyl group are claimed as antioxidants for natural and synthetic rubbers.

Fireproofing Product. 806,437. M. L. Bertrand. Filed, February 21 1955. —A fireproofing coating composition comprises flattened, expanded vermiculite in the form of matted flakes incorporated in a synthetic resin binder, *e.g.* PVC, a vinyl chloride copolymer or a polyester resin.

Fireproof Coating Compositions. 806,438. M. L. Bertrand. Filed, February 21 1955.—A fireproofing coating composition comprises exfoliated vermiculite granules, which have been rolled in a wet state, incorporated in a binder of polyvinyl acetate.

Rubber and Plastics Stock Market

A REVIEW OF PRICES AND TRENDS

THERE has been increasing activity in Industrial shares over the past week or so. In the main the buying move has been based on the encouraging results shown by the various public opinion polls on the election possibilities. To some extent, also, the Budget is beginning to make an impression on markets. It is apparent that everyone expects a very buoyant Mr Amory to present a very buoyant Budget.

The market mood, despite the rather sobering implications of the by-elections, is one of optimism rather than pessimism, and the buying which has taken place is selective but is reflected in the quotations of a number of the leading 'plastics' shares.

There was considerable support for the ordinary units of the BRITISH XYLONITE concern which lifted the price from the previous level of 51s. 3d. to 57s. 6d. The long term potential of this group is at last being fully appreciated by the market and it would be fair to say that although there is the usual degree of short term speculative activity in these shares, the main buying appears to be based on the longer term outlook rather than on chances of a quick capital profit.

The ordinary units of BAKELITE were very prominent at 25s. 9d., a gain of 1s. 6d. This move followed an announcement of increased profits which surprised the market. The actual dividend at 15% for the full year is merely maintained, but the group profit is lifted from £431,000 to £538,000 after allowing £271,000 against £239,000 for depreciation and £16,000 for scientific research against £36,000 for this item and special obsolescence. The earnings on the ordinary shares come out at around 22% and at the current price of 25s. 9d. the yield is in the region of 6%.

Following the improved results there was further buying of the ordinary of UNIVERSAL ASBESTOS, which raised the price from 16s. to 19s.

After their recent upswing, however, the ordinary of RUBBER IMPROVEMENTS were brought back sharply. It had been said at one time that there was a big buyer of these units active in the market. If this was so, then the 'big buyer' suddenly ceased his activities and the price slipped back fractionally. In its turn this small fall apparently brought in a number of profit takers and the price of the shares was dropped from 10s. to 8s. 9d.

The very cheering results from P. B. Cow had already been discounted by an optimistic market, so there was little reaction in the shares. The company announced a dividend of 7½% which brought the year's total up to 12½% compared with 10% last time. Group trading profit comes out at £359,000, a rise of some £20,000 over the previous year's total. After taxation of £204,000, compared with £190,000, there is left a net profit of £155,000 against £148,000. The yield on the ordinary shares at the current level of 6s. 3d. is in the region of 8% and the dividend is nearly twice covered by earnings.

There was a slight setback in the prices of COURTAULDS and I.C.I.

Continued on page 489

Share Price Movements

Par Value	Company	1958-59 High	Low	Mar. 14	Latest
5/-	Albright & W. Ord. ..	22/3	13/4½	20/3	22/-
£1	„ „ „ 5% Pref...	16/7½	15/4½	16/3	16/3
5/-	Anchor Chemical Ord...	12/7½	10/3	11/-	12/3*
5/-	Andersons Rub. Ord. ..	4/3¾	3/-	3/1½	3/0¾
2/-	Anglo-Amer. Vulc. Fibre Ord.	4/3	2/-	3/10½	3/3
£1	Angus Geo. Ord. ..	29/10½	21/-	28/-	29/3
5/-	Armitage (Sir Elk.) Ord.	4/10½	2/3	4/6	4/6
5/-	Ault & Wiborg Ord. ..	12/10½	11/9	12/6	12/3
£1	Avon India Rubber Ord.	42/-	27/-	36/10½	36/9
£1	„ „ „ 6% Pref.	18/6	17/3	17/6	17/6
10/-	Bakelite Ord.	26/-	17/-	24/3	25/9
£1	„ 6% Pref. ..	19/6	18/3	18/3	18/3
£1	Baker Perkins Ord. ..	46/6	30/7½	46/3	45/9
4/-	Bank Bdg. Rubber Ord.	2/7½	1/6	2/-	2/-
5/-	Boake (A.) Roberts Ord.	18/6	9/-	13/-	13/1½
£1	„ „ „ 5% Pref.	15/1½	13/9	13/9	13/9
4/-	Brammer H. Ord. ..	15/6	9/-	15/6	15/4½
5/-	Bridge, David Ord. ..	27/9	16/3	27/6	27/1½
5/-	Bright, John Ord. ..	13/10½	8/9	11/3	11/1½
2/-	Brit. Ind. Plas. Ord. ..	8/1½	4/9	8/-	8/-
2/-	„ 10% (tax free) Pref.	5/9	4/8¼	4/9	4/9
£1	British Xylonite Ord. ..	57/9	28/6	51/3	57/6
£1	„ „ 5% Pref.	15/6	14/-	14/9	14/9
5/-	BTR Ind. Ord.	13/3	9/4½	11/6	10/4½*
£1	„ „ 7½% Pref. ..	22/6	20/9	22/6	22/6
£1	Courtaulds Ord... ..	35/-	20/-	34/6	34/1½
£1	„ 5% 1st Pref.	18/6¾	15/7½	16/9	16/9
£1	„ 6% 2nd Pref.	19/6	17/1½	19/9	19/6
4/-	Cow, P. B. Ord. ..	6/7½	3/6	6/6	6/3
£1	„ 5% Pref. ..	13/6	10/9	13/3	13/3
5/-	Dale, John Ord... ..	15/-	10/-	10/9	10/9
£1	„ „ 6% Pref. ..	15/10½	13/-	15/7½	15/7½
1/-	Dannimac Mfg. Ord. ..	6/2½	2/6	5/10½	5/9¾
10/-	De La Rue Ord. ..	33/3	20/9	31/-	32/4½
£1	„ „ „ 3½% Pref. ..	11/9	10/-	10/3	10/4½
6/8	Distillers Co. Ord. ..	27/-	15/9	25/9	25/9
£1	„ „ 6% Pref...	21/0¾	19/10½	21/-	21/-
£100	„ 5% Conv. Loan	£96¼	£91	£93½	£93½
£100	„ 5½% Unsec. Loan	£93½	£87 7/16	£93	£93
10/-	Dunlop Rubber Ord. ..	26/7½	14/9	24/9	25/1½
£1	„ 5½% Pref.	18/9	15/10	17/3	17/3
£100	„ 3½% 1st Debs.	£73	£67¾	£72¾	£72¾
£100	„ 4½% 2nd Debs.	£82¾	£78	£82½	£82½
4/-	Ebonite Cont. Ord. ..	15/3	7/6	14/4½	14/-

Par Value	Company	1958-59 High	Low	Mar. 14	Latest
£1	English China Clays Ord.	58/-	29/9	56/3	57/6
£1	Goodyear Tyre 4% Pref.	12/9	12/-	12/6	12/6
5/-	Greeff Chem. Ord. ..	17/9	14/-	16/9	17/-
10/-	„ „ 5½% Pref...	8/-	7/9	8/-	8/-
4/-	Greengate & Irwell Ord.	7/0¾	4/9	6/-	5/9
1/-	Hunt & Moscrop Ord. ..	1/5	1/1½	1/3	1/3¾
£1	Imp. Chem Ord. ..	38/-	28/3	35/6	35/9
£1	„ „ 5% Pref. ..	17/3	16/-	16/9	16/6
£100	„ 4½% Unsec. Loan	£88½	£80	£88	£88
£100	„ 5½% Conv. Loan	£121	£99	£117½	£118
1/-	Kleemann (O. & M.) Ord.	5/5½	2/6	5/-	4/10½
£1	„ „ 6½% Pref.	16/9	15/-	16/6	16/6
2/-	Lacrinoid Prod. Ord. ..	2/5½	1/5¾	2/4½	2/1½
5/-	Laporte Ind. Ord. ..	21/9¾	13/7½	21/-	21/9
£1	„ „ 7½% Pref.	22/10½	21/10½	22/9	22/9
£1	Leyland & Birm. Rubber Ord.	—	—	50/-†	52/6*
£1	„ „ 6% Pref.	21/3	16/1½	16/10½	16/10½
2/-	London Rubber ..	14/4½	8/6¾	14/3	14/-
£1	„ 6% Red. Cum. Pref.	19/9	16/3	18/9	18/9
£1	McKechnie Bros. Ord.	45/-	32/6	45/-	43/-
£1	„ „ 'A' Ord.	44/6	30/-	42/6	41/6
£1	„ „ 6% Cum. Pref.	16/3	16/-	16/3	16/3
5/-	Monsanto Chem. Ord. ..	16/4½	13/-	15/6	15/4½
£1	„ „ 3¾% Pref.	12/6	11/-	12/-	12/-
£100	„ 6% Debs.	£104	£101¼	£103	£103
£1	North British Rubber ..	—	—	15/3	15/3
2/-	RFD Ltd. Ord.	5/3	3/5¼	4/6	5/-
£1	„ „ 5½% Pref. ..	14/6	11/6	12/6	12/6
2/-	Rubber Imp. Ord. ..	15/6	6/-	10/-	8/9
2/-	„ „ 'A' Ord.	14/3	6/-	10/-	8/6
£1	„ 5% 1st Pref.	12/3	10/-	10/-	10/6
5/-	Rubber Reg. Ord. ..	13/-	11/-	10/-	10/1½
4/-	Shaw Francis Ord. ..	18/-	9/9	17/-	16/6
2/-	Silentbloc Ord. ..	8/6¾	7/6	7/9	8/-
2/-	Sussex Rubber Ord. ..	1/8	7½	1/4½	1/4½
5/-	Sutcliffe Speak Ord. ..	7/4½	5/-	6/4½	7/-
£1	Turner & Newall Ord. ..	76/4½	52/-	70/-	70/7½
£1	„ „ 7% Pref.	24/-	22/1½	23/6	23/3
5/-	Universal Asbestos Ord.	19/-	8/0¾	16/-*	19/-
5/-	Viscose Dev. Ord. ..	10/7½	6/3	9/6	9/4½
5/-	Warne William (Holdgs.) (Ord.)	12/9¾	8/-	11/-	12/9

*Ex-dividend †Ex-cap.

Rubber Markets

LONDON

Prices continued their recent improvement in the London rubber market and fresh gains ranging to about a farthing per lb. have been recorded. The Spot scored the biggest rise—of ½d. at 26⅞d. per lb.—while nearby positions are a farthing better and more distant positions an ¼d. harder. Reported further Russian buying and a small factory demand assisted the advance which was based mainly on the general confidence in the outlook for natural rubber.

Latest prices are as follows:

No. 1 RSS Spot: 26¾d.-27d.

Settlement House:

April 26⅞d.-26⅞d.
April/June 26¾d.-26⅞d.
July/September 26⅞d.-27d.
October/December 27d.-27⅛d.
January/March 27d.-27⅛d.

No. 1 RSS cif basis ports:

April 26½d.-26¾d.
May 26½d.-26¾d.

Godown:

April 90½ Straits cents nominal.

LATEX

Centrifuged latex per gallon in drums, April/May shipment, 15s. 10d. seller, cif European ports. Spot, seller, 16s. 1d. Bulk, seller, 15s. 10d. Creamed, seller, 15s. 4d. Normal, seller, 11s. 11d.

AMSTERDAM

The Amsterdam rubber market ruled as follows on March 20:

	Guilders per kilo Mar. 20	Previous
March	2.56½	2.53
April	2.56½	2.55
May	2.56½	2.55
June	2.56½	2.55
April/June	2.56½	2.55
July	2.58½	2.58
August	2.58½	2.58
September	2.58½	2.58
July/September ..	2.58½	2.58½

Sales: 165 Tendency: Steady

SINGAPORE

Prices were marked down slightly at the opening on lower overseas advices and the market then ruled quiet with volume small on March 20. Lower grade interest was meagre but there was fair enquiry for remilled grades. Factories were quiet. The afternoon was dull with turnover again limited. The close and after hours dealings were very quiet. According to trade sources imports have been heavier but this should be offset by the progressive decrease in Malayan production expected until around the end of May. From then onwards production should again increase, reaching its peak at the end of the year, they said. Malayan production in February is estimated around 55,000 tons against 64,535 in January and 71,467 in December last year.

	Straits cents per lb., fob Malayan ports to open ports Close	Previous Close
No. 1 RSS, April	91 —91¼	91⅜—91½
May	91¼—91½	91⅝—91¾
No. 2 RSS, April	90 —90½	90¼—90⅜
No. 3 RSS, April	88⅜—89¼	89⅜—89⅞
No. 4 RSS, April	87¾—88½	88 —88¼
No. 5 RSS, April	86 —87	86 —87
No. 1 RSS, Spot..	90¼—90⅜	90⅝—91
No. 3 blanket, thick remilled, April..	85½—87½	85 —87
No. 1 fine pale crepe, April ..	93 —95	92 —94
2X thin brown crepe, April ..	84⅜—85⅞	84¼—85¼

Tendency: Quiet

The Industrial Syndicate quote latex, native produce, 60% centrifugal, packed in rec. drums fob at 177.80d. per gallon.

NEW YORK

The following prices ruled in New York on March 20:

DEALERS' PRICES

	US cents per lb. March 20	Previous
No. 1 RSS, Mar.	31⅜b–32a	31⅜b–31⅞a
Apr.	31⅜b–32a	31⅜b–31⅞a
No. 2 RSS, Mar.	31⅜b–31⅞a	31⅜b–31⅞a
Apr.	31⅜b–31⅞a	31⅜b–31⅞a
No. 3 RSS, Mar.	31⅛b–31⅜a	31⅛b–31⅛a
Apr.	31⅛b–31⅜a	31⅛b–31⅛a
No. 1 RSS, Spot	31⅜b–32a	31⅜b–31⅞a
No. 3 amber blanket crepe May	30¼b–30½a	29⅞b–30a
No. 1 latex, thin crepe, Mar. ..	31⅜b–32a	31⅞n
No. 1 latex, thick crepe Mar. ..	31⅛b–31⅜a	31⅛n

FUTURES—REX CONTRACT

	US cents per lb. Close	Prev. Close
March ..	31.65b–31.80a	31.60b–31.70a
May ..	31.85b–31.90a	31.65b–31.75a
July ..	31.85t	31.70b–31.75a
Sept. ..	31.85t	31.80t
Nov. ..	31.80b–31.90a	31.65b–31.80a
Jan. ..	31.80t	31.65b–31.80a
March ..	31.75b–31.80a	31.65b–31.80a

Sales: 34 Tendency: Steady

Rubber futures were steady in light volume on March 20. Traders said shipment offerings today were light, while factory interest was also quiet.

CREPE RUBBER

The following prices ruled in New York on March 18:

Dealers' selling prices:	Cents per lb.
Sole crepe, standard grade 'A'	46 (46)
Thick crepe	33¼ (33¼)

BANGKOK

No. 1 RSS

The price for No. 1 RSS, at Bangkok on March 20 was 29.37½ (29.37½) US cents per lb.

DJAKARTA

Prices held steady on March 20. There was again a shortage of offerings. Export certificates were quoted at 332 sellers.

	Rupiahs per kilo Mar. 20	Previous
Spot, No. 1 Priok ..	24.00b	23.90b
Spot, No. 2 Priok ..	23.20b	23.10b
Spot, No. 3 Priok ..	22.10b	22.00b
No. 1 fine pale crepe	22.75b	22.20b

Tendency: Steady

CEYLON

No. 1 RSS

The price for No. 1 RSS, spot, at Colombo on March 20 was 113 (115) Ceylon cents per lb.

STOCK MARKET

Continued from page 488

ordinary shares following the announcement of reduced profits from BRITISH NYLON SPINNERS, in which both companies have a half share.

The consolidated profit of BNS comes out at £4,879,000 compared with £9,619,000. The balance was struck after heavier depreciation of £1,376,000 but there was no allocation to fixed assets replacement reserve against £500,000 last time. The considerably lower profit was the result of marked increases in costs, particularly of raw materials. Although the lower earnings of the company had an adverse effect on the shares of both its parents initially, this was soon cancelled out and both moved upward again.

PLASTOCRAFT PRODUCTS (DARWEN) has declared the first interim on its shares which were sold to the public last September. The current half-time payment is 10%. When the issue was made, the directors forecast the total for the year of 'not less than 30%.'

The directors of MUSICAL AND PLASTIC INDUSTRIES have declared a final dividend of 20% which goes against only 14% last time; total payout for the year on the increased capital is therefore brought up to 32¼% against 25%.

BANK BRIDGE RUBBER ordinary shares remained steady at 2s. following the issue of the full report. This document shows a decline in current assets from £81,000 to £58,000 and a fall in liabilities of around £10,000 to £12,000.

The quarterly figures of the MARLEY TILE concern for the first three months to January 31 last show a rise of £64,000 to £166,000. This figure is struck after a charge for depreciation some £9,000 higher at £136,000, and for tax—£170,000, a rise of £13,000.

There has been some demand for LAPORTE INDUSTRIES ordinary shares which was touched off by a recommendation of the long-term prospects of this company in the National Press. LEYLAND AND BIRMINGHAM RUBBER are still encountering selected support and the same is true of ENGLISH CHINA CLAY'S ordinary.

Industry INTELLIGENCE

Technical Data

Tear Resistance of Microcellular Soling

Tear resistance is an important property of microcellular rubber soling and in Polysar Technical Report No. 7:11B, data are given for the tear resistance of microcellular rubbers made from two different compounds. The author is K. Talbot and the report is distributed in the UK by Polymer (UK) Ltd., Walbrook House, Walbrook, London, E.C.4. Both compounds contained 50 parts of Polysar SS-250 (a high-styrene copolymer). In one compound, this was blended with 50 parts of Polysar Krylene NS (a 'cold' SBR) and in the other compound with 50 parts of natural rubber. Tests were made on a range of cures, both split tear resistance and stitch tear strength being measured.

The results showed that the density increases with time of cure, but at any given cure, there is little difference in density between the two compounds. Both the split tear resistance and the stitch tear strength increase with increasing density. Compared with the natural rubber compound, the Polysar Krylene NS compound has a split tear resistance of the order of 50% higher and a stitch tear strength of the order of 20% higher. The tear test methods used are described in the report.

Pliolite Rubber Latex 5352

Pliolite Rubber Latex 5352 is a butadiene-styrene latex prepared by polymerization at low temperature. It has a total solids content of 69% and compared with other latices of high solids content, such as Pliolite Rubber Latices 2105 and 5350, No. 5352 has a much higher solids content, better processability when used for latex foam manufacture and improved resistance to discolouration. Data for the properties of Pliolite Rubber Latex 5352 and information on its use in latex foam are given in a leaflet issued by Hubron Sales Ltd., Albion Street, Failsworth, near Manchester.

For making foam rubber, Pliolite Rubber Latex 5352 can be used as the sole latex or it may be admixed with natural rubber latex. The 100% synthetic compound is suitable for making foam for many applications, including slab stock, car cushioning and furniture cushioning. A suitable compound is as follows (all parts by weight): Pliolite 5352 latex 100, Wingstay S antioxidant 1.5, sulphur 2, zinc diethyldithiocarbamate 0.5, zinc mercaptobenzthiazole 1.5, zinc oxide 3, Trimene Base 0.25, and potassium oleate soap and sodium silicofluoride as required. The two last ingredients can be used at the same levels as now employed with 100% natural rubber latex foam. No maturing is required with the 100% synthetic foam compound. For very low cost formulations, cored cushions can be formulated with up to 50 parts of filler and still maintain good properties.

Pliolite Rubber Latex 5352 can be used with advantage for pigmented textile backsizing. For this application, it offers the advantages of very high solids content and improved pigment binding, while it has improved resistance to discolouration by heat and by light.

Machines, Materials and Equipment

Drum Lifting Device

A new drum lifting device the VLL/10, incorporates a safety mechanism to apply adequate clamping pressure before the drum leaves the floor. It is made by British Electrical Repairs Ltd., Manchester, and can be supplied to handle drums of any type, size and weight, according to requirements. Whilst suspended from a crane or hoist hook prior to lifting the clamps remain in the 'locked open' position, as in the photo, but when the device has been lowered on to the drum end, movement of a hand lever through 190° sets the clamps in the 'pre-loading' position. As the drum is lifted, clamping pressure is further increased by the supporting lever linkage mechanism. A power-operated model is available equipped with automatic or remote electrical control which, for example, may be operated by the driver of a mobile crane.

Tensional Steel Strapping Tool

Packers Supply Co. Ltd., Agripta House, Burlington Road, New Malden, Surrey, announce the introduction of a new tensional steel strapping tool, the 'HSD.' This tool is designed particularly for heavy work, and it uses strapping up to 1in. x .036in. An interesting feature of the tool is that it operates on top of the strapping and not underneath it as with conventional tools.

Radio-Active Radiation Monitoring

The Electrical Machine Co. Ltd., 41 Lodge Road, West Croydon, Surrey, has formed a Radiological Division which is operating a complete Radiation Monitoring Service to users of X-ray machines and other sources of radiation, Films, sensitive to radiation, and housed in special containers, are worn by personnel working in the region of radio-activity. After a week's exposure they are exchanged with unposed films and are processed, read and recorded by EMC. The weekly dosage of individuals can thus be recorded and in the event of a weekly or cumulative dose exceeding the recommended dosage, as laid down by the International Commission of Radiological Protection, an immediate communication is sent to the organization concerned so that steps may be taken to remove and give the affected person the necessary treatment, and also to take measures to avoid future occurrences.

Hycar Adhesive in Shoes

A new range of ladies' flexible shoes especially designed to appeal to the fashion conscious over-forties who want comfort combined with elegance, have recently been introduced by Portland Shoes Ltd., Leicester. The secret of their comfort is largely due, the makers claim, to the fact that soles and uppers are joined by a Hycar synthetic rubber based adhesive, thus ensuring maximum flexibility. After application to the roughened leather, the adhesive is allowed to dry; sole and upper are then bonded by heat activation, effected by clamping them in a press heated to 195°F. Hycar synthetic rubbers are manufactured by British Geon Ltd.

Publications Received

'Aerolite' 600 and 606

The uses of 'Aerolite' 600 and 606 synthetic glues in teaching establishments—technical colleges and schools etc.—are outlined, with illustrations, in 'Technical Notes 194,' February, issued by Ciba (ARL) Ltd., Duxford, Cambridge.

Panolite Factory White Paint

A leaflet giving details of 'Panolite' factory white paint has been issued by the manufacturers, P. and A. New Ltd., Ditchford Mill, Wellingborough. 'Panolite,' a high grade flat oil paint especially formulated to give the best possible results on a wide variety of surfaces, is made in white and cream, but can be tinted to any pastel shade with oil stainers. The price is 36s. per gallon, with a special discount for quantities.

Coseley Buildings

General and technical information about the expanded range of steel frame buildings manufactured by Coseley Buildings Ltd., Lanesfield, Wolverhampton, is given in a colour illustrated brochure 'Coseley Buildings.'

RUBBER TRENDS

Described as a quarterly bulletin for producers and manufacturers of, and dealers in, rubber, 'Rubber Trends' is prepared by The Economist Intelligence Unit Ltd. The first number, dated March 1959, has now been published. The quarterly is available at an annual subscription of £30 (US, $90) with single issues at £10.

The first issue consists of 46 pages and contains reviews of trends in a number of consuming countries; market reports from Singapore and London and a statistical appendix.

Two special reports are included, on Russian consumption and production of rubber and on the prospects for UK rubber consumption. As the report on Russia states, 'little is known of the actual scale of rubber consumption in the Soviet Union.' This is assessed, however, at 550,000 to 600,000 metric tons annually, of which approximately 70% may be synthetic. After dealing with imports of natural rubber and the Soviet tyre industry, the report outlines the history and growth of the synthetic rubber industry. Some very interesting background details are given together with estimates of production figures 1950–1958. Of considerable interest, too, are the figures given in the outline of the Seven-Year Plan for Soviet rubber production of butadiene-styrene and butadiene-methylstyrene rubbers and latex as at January 1 1959 and January 1 1966 (percentage of total output) is given as 38.3 and 43.6 respectively. Production of SKB is quoted as 50.7 and 8.5; of chloroprene rubber as 6.6 and 12.6; and of isoprene rubber as nil and 25.0.

The report remarks that Russian uncertainties about the future supply position of rubber seem to be emphasized both by the scale on which research is being conducted into the substitution of plastics for both natural and synthetic rubber and by the eagerness of the Soviet authorities to develop their trade with Ceylon and Indonesia.

It is understood that 'Rubber Trends' may be available at a reduced rate to members of the Federation of British Rubber and Allied Manufacturers if a sufficient number apply. Orders from members, therefore, should be sent to the Federation.

Mr Seymour Kraft, Mr Edmund Stekel and Lord Dunsany have been appointed directors of Lower Perak Rubber Estates. Mr F. S. Physick and Mr A. W. Wallich have resigned from the board.

Export Opportunities

Industrial Moulded Rubber Products for the US

The British Consulate General in Los Angeles has advised us that Mr Thomas B. Keenan, president of Plastic and Rubber Products Co., 2100 Hyde Park Boulevard, Los Angeles 47, California, is planning to visit Europe later this year. Mr Keenan expects to be in London from June 1 onwards and is making arrangements to stay at the Westbury Hotel, New Bond Street, London, W.1. The objects of his visit to the United Kingdom may be summarized as follows: (i) to arrange licensing agreements with United Kingdom manufacturers of industrial moulded rubber products for the manufacture of their products in the US; (ii) to exchange technological ideas and information with United Kingdom firms.

Plastic and Rubber Products Co. was established in 1941 and operated as a partnership until 1950 at which time it became a corporation. Manufacturers interested in meeting Mr Keenan are invited to write to him c/o Room 728, Export Services Branch. B.o.T. reference: ESB/5502/59.

Wire for Bicycle Tyres and Machinery for Bicycle Tyre Industry for Israel

Mr Isaac Hasin of Bico Commercial and Industrial Representations, 7 Zamenhoff Street, Tel Aviv, has told the British Embassy at Tel Aviv that he would like to get in touch with United Kingdom manufacturers of wire for bicycle tyres and machinery for the bicycle tyre industry. Bico Commercial and Industrial Representations were established in 1925 as manufacturers' representatives for raw materials, tools, machinery, non-ferrous metals and agricultural equipment, and they represent a number of United Kingdom firms for these products.

Manufacturers interested in this enquiry should write direct to the Israeli concern and should notify the Commercial Secretariat, British Embassy, 192 Hayarkon Street, Tel Aviv, that they have done so. B.o.T. reference: ESB/6072/59.

The address of the Export Services Branch of the Board of Trade is Lacon House, Theobalds Road, London, W.C.1. Telephone number: Chancery 4411, extensions 776 or 866.

Solution to RJIP Crossword

(See page 484 this issue)

ACROSS.—2, Lampblack. 7, Ante. 8, Least. 10, Furfural. 12, Pools. 13, Parody. 14, Win the. 15, Rinse. 16, Swotting. 19, Snobs. 21, Rate. 22, Butadiene.

DOWN. — 1, Insulation. 2, Leaf. 3, Moor. 4, Ball-point. 5, Ada. 6, Kit. 9, Sulphonate. 11, Undressed. 17, Once. 18, Tyre. 19, Sob. 20, Out.

COMPANIES in the NEWS

Monsanto Chemicals

In the course of his annual report, Sir Miles Thomas, chairman of Monsanto Chemicals Ltd., states that in the early part of the year under review there was a marked slackening in demand for some plastics products of the group. The pattern of business done in plastics and in technical products during the early part of the year closely followed that of the chemicals division. The sales curves for most of the division's product groups began to rise during the summer and autumn, and the rate at the end of the year was encouragingly better than at the beginning.

In the important business of styrene plastics, Sir Miles continues, we have been particularly active in developing new grades of toughened material. These are increasingly in demand. During the first half of the year the home trade in rubber chemicals remained buoyant, but during the second half a cautious tone among customers was noticeable. Overseas business in these products was quiet until the late summer, after which it showed an upward trend which was particularly welcome in compensation for the sluggish home market.

Progress with the new Tred synthetic materials was inevitably slow. This product, which offers marked improvements for boot and shoe soling, is, because of its longer wearing characteristics, sure to enjoy steadily increasing demand.

In expectation of commissioning the Fawley polythene plant, we carried out intensive market survey and development work in the second half of the year, and these efforts will be continued until production at Fawley gives us bulk entry into this important area of trade.

Balance sheet details were given in the March 14 issue of *RJIP*.

Industrial Building Areas

The Parliamentary Secretary to the Board of Trade, Mr John Rodgers, M.P., in a written answer in the House of Commons on March 10, announced additions to the list of areas where Government assistance under the Distribution of Industry (Industrial Finance) Act, 1958, is available. The additional areas are: Oldham, Shaw and Middleton; Rochdale and Littleborough; Sunderland, Pallion and Southwick; Arbroath and Carnoustie; Sanquhar.

Mr L. C. Burke has been appointed chairman of Standard Telephones and Cables (S.A.) (Pty), a subsidiary of Standard Telephones and Cables of the UK.

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationery Office.

UNION CARBIDE

(B773,878) For synthetic resins for use in manufacture, plastics included in Class 1; and alcohols, esters, glycoethers, ketones, nitrogenous compositions, oxides, polyols, surface-active agents and fluorinated hydrocarbons, all being synthetic chemical products for industrial use. By the Union Carbide Corporation, 30 East 42nd Street, New York 17. Address for service is c/o Marks and Clerk, 57 and 58 Lincoln's Inn Fields, London, W.C.2. (Class 1; March 4 1959).

ULTRAMOLL (779,702) For chemical products included in Class 1 for use in the manufacture of plastics. By Farbenfabriken Bayer Aktiengesellschaft Bayerwerk, Leverkusen (22c) Germany. Address for service is c/o Carpmaels and Ransford, 24 Southampton Buildings, Chancery Lane, London, W.C.2. (Class 1; March 4 1959).

POROSAN (776,424) For rods, tubes and shaped sections, all made of common metal or of combinations of common metal and plastics, the metal predominating, and all for use in the suspension of shop window displays or for fixing shelves and the like into position. By Porosan Plastics Ltd., 103 Cannon Street, London, E.C.4. (Class 6; March 4 1959).

PLASTOMET (776,657) For sheets, strips; shaped sections, rods and chains, all included in Class 6; tubes (not being boiler tubes or parts of machines), wire (not insulated electric wire or fuse wire) and foil (not for use by painters or decorators); all being goods made of common metal coated with plastics, the common metal predominating. By Boulton and Paul Ltd., 14 Stanhope Gate, London, W.1. (Class 4; March 4 1959).

FRIDO (780,563) For marker buoys made of plastics. By Frido Ltd., Victor Works, Beehive Mills, Brewery Street, Stockport, Cheshire. (Class 9; March 4 1959).

ALLDAN (784,164) For articles included in Class 20 made of plastics. By Alldan Products Ltd., 41 George Street, Baker Street, London, W.1. (Class 20; March 4 1959).

Future Events

INSTITUTION OF THE RUBBER INDUSTRY

Tuesday, April 7.—Meeting of the Education Committee at 10.30 p.m., and of the Examinations and Qualifications Board at 2.30 p.m.

Burton-on-Trent Section.—Wednesday, April 1, at the Midland Hotel, Station Street, Burton-on-Trent, at 7.30 p.m. Annual general meeting, followed by 'The Technical Department,' by J. A. Hardman, M.Sc., BTR Industries Ltd.

North-Eastern Section. — Monday, April 6. Annual general meeting and dinner.

Preston Section.—Monday, April 6, at the Bull and Royal Hotel, Church Street, Preston, at 7.15 p.m. Annual general meeting, to be followed by a film entitled 'The Titanium Pigment Story,' and a short talk on the subject.

West of England Section.—Annual general meeting and film evening at Melksham House, Melksham, at 7.30 p.m.

PLASTICS INSTITUTE

North-Western Section. — Friday, April 3, at the Textile Institute, Blackfriars Street, Manchester, at 6.45 p.m. 'Developments in the Processing and Application of Acrylic Resins,' by L. Griffiths, Imperial Chemical Industries Ltd.

Plastics and Polymer Group, Society of Chemical Industry.—Tuesday, April 7, at the SCI Meeting Room, 14 Belgrave Square, London, S.W.1, at 6.30 p.m. 'Applications of Gas Liquid Chromatography in a Plastics Analytical Department,' by Dr J. Haslam and Mr A. R. Jeffs, Imperial Chemical Industries Ltd., and 'Differential Thermal Analysis of some High Polymers,' by Mr C. D. D'Oyly-Watkins, Mr G. L. Palmer and Mr C. M. Robertson, Ministry of Supply, Woolwich.

South Wales and Monmouthshire Section.—Wednesday, April 8, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. 'Newer Processes for Treatment of PVC,' by I. Phillips, B.Sc., British Geon Ltd.

Southern Section.—Thursday, April 2, in the Chemistry Department, University of Southampton, at 7.30 p.m. 'Courtelle — A New Acrylic Fibre,' by H. Hampson, A.T.I., Courtaulds Ltd.

Changes of Name

Matex Ltd. (167,696), manufacturers of plastic roofing compound, etc., Berger House, Berkeley Square, London, W.1.—Name changed to Similpierre Marble Products Ltd. on January 12 1959.

G. and H. Plantations Ltd. (614,946), 2, 3 and 4 Idol Lane, London, E.C.3.—Name changed to Anglo Oriental Plantations Ltd.

PATENT LIST

Printed copies of the Specifications in the following list can be obtained from the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, price 3s. 6d., including postage, but about six weeks after the date of this publication will usually elapse before they come available. Orders with remittance may be sent in advance to the Patent Office, and will be fulfilled immediately the Specifications are published.

COMPLETE SPECIFICATIONS ACCEPTED

Open to public inspection on March 11 1959

Imperial Chemical Industries Ltd. Laminated, synthetic rubber sheet materials. 810,029.

E. I. du Pont de Nemours and Co. Hydrocarbon polymers and the preparation thereof. 810,210.

Dunlop Rubber Co. Ltd. Apparatus for making pneumatic tyres. 810,298.

R. H. Windsor Ltd. Injection-moulding machines. 819,200.

Open to public inspection on March 18 1959

A. A. Samuel. Method for producing fireproof plastic material and fireproof plastic materials obtained therethrough. (Addition to 721,706) 810,551.

Bitumex Ltd. Manufacture of articles of plastic material, for example, drain pipes and guttering by extrusion. 810,421.

British Cellophane Ltd. Manufacture of polythene plastic films. 810,474.

British Celanese Ltd. Plasticizers for cellulose derivatives. 810,557.

Union Carbide Corporation. Epoxy polymerizable and polymerized compositions and a process for their preparation. 810,412.

S.A.S. Lavorazione Materie Plastiche (LMP) Di M. I. Colombo and C. Method and device for extruding tubes of thermoplastic materials. 810,703.

General Electric Co. Silicone elastomers. 810,532.

Universal Oil Products Co. Anti-ozonation of rubber. 810,529.

Transparent Plastic Containers Ltd. Display packages and the like. 810,664.

Conex-Terna Ltd. and F. Whitworth. Joints for pipes of synthetic resinous and like materials. 810,628.

B. F. Goodrich Co. Tubeless tyre. 810,629.

Standard Oil Co. Process for producing normally solid polymers or copolymers from ethylene. 819,572.

C. Zeiss-Stiftung (trading as Jenaer Glaswerk Schott and Gen.). Process for the manufacture of structural components consisting of glass material and an unsaturated polyester resin. 810,577.

Western Electric Co. Inc. Methods and apparatus for the extrusion of plastic compounds. 810,586.

General Electric Co. Preparation of cross-linked polysiloxanes. 810,684.

Ruhrchemie A.G. Process for the

production of high molecular weight polymers of ethylene. 810,484.

Mecanie (London) Ltd. Buttonhole construction for articles made from thin plastic material. 810,626.

Vereinigte Glanzstoff-Fabriken A.G. Process for the production of artificial yarns and films from viscose. 810,687.

Distillers Co. Ltd. Polymerization process. 810,388.

General Electric Co. Semiconducting elements of silicon. 810,558.

United States Rubber Co. Compositions adapted for use in bonding resins to glass. 810,510.

NEW COMPANIES

Expanded Polymers Ltd. (620,465).—February 6. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in resinous and plastic materials of all kinds, etc. The directors are: Henry N. Skelmardine, Knowle, Mayfield; Alfred Cooper, Pine Holm, Blenheim Gardens, Sanderstead; Harold P. Goodall and John R. Swift and Stuart B. Turner. Regd. office: 675 Mitcham Road, Croydon.

Ilford Tyre Company Ltd. (620,473).—February 6. Capital: £100 in £1 shares. To carry on the business of manufacturers, repairers and factors of and dealers in all kinds of tyres, etc. The permanent directors are: Jack A. Willis, 121 Marks Road, Romford; and Jack H. Redding, 47b Wanstead Park Road, Ilford. Regd. office: 47b Wanstead Park Road, Ilford, Essex.

Multibox Co. Ltd. (620,578).—February 9. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in plastic, rubber, synthetic rubber and other solutions, boxes, cages, bins, crates, packing cases, etc. The subscribers (each with one share) are: Anthony C. Cadwallader, 213 Piccadilly, London, W.1., solicitor; Vincent H. Cornell, 15 Chelsea Farm House, Milmans Street, S.W.10, solicitor's managing clerk. The first directors are to be appointed by the subscribers. Regd. office: Halifax Buildings, Cranby Street, Leicester.

Re-inforced Plastic Structures (Lewes) Ltd. (620,619)—February 9. Capital: £1,000 in £1 shares. To carry on the business of display specialists and contractors, sign manufacturers, figure and novelty manufacturers, etc. The directors are: Thomas A. Mellor, Whiteacre, Southdown Road, Shoreham-by-Sea, director of Silverline Signs and Displays Ltd.; Christopher C. Akers, 99 Kings Road, Chelsea, S.W., director of Acresmith Properties Ltd., etc. Regd. office: Watergate Lane, Lewes, Sussex.

Medafoam Products Ltd. (620,802)—February 11. Capital: £100 in £1 shares. To carry on the business of manufacturers of and dealers in plastic substances and goods made therefrom, etc. The subscribers are: Mrs E. D. Kalfus, 59 Basing Hill, London, N.W.11, manufacturer of plastic foam products; Samuel Kalfus, 59 Basing Hill, London N.W.11, furrier; Mrs Rosa Meyerhardt, 20 Belsize Park, London, N.W.3. Regd. office: 56 Finsbury Pavement, London, E.C.2.

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APPOINTMENTS VACANT

6d. a word, Minimum 10/- Box 2/-

NATIONAL COLLEGE OF RUBBER TECHNOLOGY,
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Holloway Road, London, N.17.

Immediate applications are invited for the post of lecturer in latex technology. Applicants should be qualified rubber technologists and/or science graduates with experience in the manufacturing applications of natural and/or synthetic rubber dispersions. Salary scale—£1,312 10s. x £31 10s. x £1,470. Apply for form of application and full particulars to the clerk to the governors. (339)

BRITISH company invites applications from rubber technologists, A.I.R.I. or L.I.R.I., age 21-26, for appointment as assistant manager of latex factory in Malaya. Minimum salary and allowances £885 p.a. plus furnished accommodation, Provident fund and generous annual commission. Good promotion prospects.—Write full details to Box B.842, c/o Streets, 110 Old Broad Street, E.C.2. (334)

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PROGRESSIVE company situated outside industrial area, seek services of a qualified engineer to take charge of all plant maintenance and installations, other than electrical. A.M.I.Mech.E., desirable. Permanent superannuated position. Full details and salary required to:—Box 320. (320)

RUBBER technologist. An opportunity will shortly occur for a rubber technologist to join the technical staff of a company in the vicinity of London, manufacturing a wide range of general products. Applicants, preferably of A.I.R.I. standard, are invited to write to the following Box No., giving full details of education, training, experience and salary required.—Box 330. (330)

YOUNG rubber technologist required with qualifications and experience in the formulation, testing, various processes and control of a wide range of natural and synthetic rubbers. The position vacant offers a good opportunity for an energetic and conscientious person. Write giving details of age, experience, etc., which will be treated in confidence to:—The Managing Director, The Stalybridge Rubber Co. Ltd., Ryecroft Street, Ashton-under-Lyne. (318)

APPOINTMENTS VACANT
(Continued)

WORKS engineer required with experience of rubber machinery and processes for plant in Scotland. Responsible for maintenance, equipment design and development and all engineering staff. Preferably under 35. Reply giving details of past experience and salary required to:—Box 321. (321)

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A 42in. or 36in. Mill required in good condition. Also steam pan 2ft. internal dia. 14ft.—15ft. long.—Full details to Precision Rubbers Ltd., Bagworth. (325)

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TWO 36in. x 26in. and 21in. refining mills by Shaw, friction ratio 2:1 with 100 h.p. Lancashire dynamo motor drive. 28in. x 24in. cracker with 200 h.p. motor drive. 60in. x 22in. mixing mill with 120 h.p. drive. Ex-stock.—Reed Brothers (Engineering) Ltd., Replant Works, Woolwich Industrial Estate, London, S.E.18. Telephone: Woolwich 7611/6. (337)

MISCELLANEOUS

6d. a word, Minimum 12/6 Box 2/-

MANUFACTURERS of roughing machines for rubber sheeting, sponge rubber, splitting machines, leather cloth plant, embossing plates and rollers, spreading machines and presses.—G. L. Murphy, Ltd., Imperial Works, Menston, Nr. Leeds. (238R)

MILLING compounding capacity available. Large or small quantities.—Fleet Rubber Products Ltd, 12-18 Fleet Road, Fleet, Hants. Fleet 1607. (336)

MOULDING capacity available. Competitive prices. Prompt delivery.—Fleet Rubber Products Ltd., 12-18 Fleet Road, Fleet, Hants. Fleet 1607. (335)

SLITTING capacity available for tape production.—Phoenix Rubber Co. Ltd., 2k Buckingham Avenue, Trading Estate, Slough, Bucks. Tel. No. 22307. Grams: Phenrub, Slough. (54)

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SCISSORS ground and set by London cutlers established over 100 years; 48 hours postal service; 1/6 per pair.—J. A. Fowler, 18/22 Bell Street, Edgware Road, London, N.W.1. (PAD. 1491.)

16,000 LB. of freshly mixed compound to British Standard specification 1154 group Z/12, and/or Ministry of Supply specification CS.2509. The material I.N.O. approved and released. Enquiries welcomed, best offer accepted for quick sale.—Box 338. (338)

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